SECTION VIII

FACULTY OF SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS

SCHOOL OF BIOCHEMISTRY AND IMMUNOLOGY

Programme:	**Immunology**
School:	Biochemistry and Immunology
Award and Exit Award:	M.Sc./P.Grad.Dip.
Admission Regulations:	Applicants will hold a minimum upper-second class Honours Bachelor degree (2.1) in Medicine, Veterinary Science, Dentistry, Molecular Biology, Genetics, Immunology, Biochemistry, or any Biological Sciences. Medical graduates must have a M.B., B.Ch., B.A.O., or equivalent from a recognised medical school. Veterinary graduates must have B. Vet. Sci. from a recognised veterinary school.
Mode of Delivery and Duration:	One-year full-time
Programme Structure:	Students take modules totalling 90 ECTS credits. Taught core modules of 60 credits (1 with 15 ECTS, 2 with 10 ECTS and 5 with 5 ECTS) and Research Project/Dissertation Module carrying 30 credits are all obligatory.
Assessment and Progression:	Students who have successfully passed all the taught modules and module IM7112 and accumulated 90 ECTS, will be considered for a Master's degree. Students must achieve at least 50% in IM7112 and all taught modules (IM7101-7111) to fulfil criteria for the award of the M.Sc. The final module mark will be calculated using the weighted assessment components. Failure of Modules: In cases where students fail to achieve a minimum of 50% in a module, a repeat of a written exam or written examination will be permitted during the appropriate repeat periods. Only one repeat will be allowed and the maximum mark awarded for the resubmitted assignment or examination is 50%. The practical for module IM7102 and module IM7112 cannot be repeated. Students must pass term 1 modules before they can progress to term 2. Any students failing any of the term 2 modules (apart from IM7112) will be able to repeat. Failure of more than one module, on the second attempt, indicates failure, of the whole course, requiring exit from the course. Compensation: Students who fail a module (apart from IM7112, which must be passed)), but obtain 45% or more in that module, may compensate from marks awarded for the other modules, as appropriate, up to a total of 5%. To begin the research project, students must have completed and passed all previous modules. The IM7112 module will make up 33% of the overall marks in the final evaluation of the awarding of the M.Sc. degree. Students must achieve at least 50% in IM7112 to fulfil criteria for the award of the M.Sc. course. Postgraduate Diploma: students who have successfully passed all the taught modules of the course and accumulated 60 ECTS, but who do not wish to proceed to the module IM7112 stage, or if they have submitted, but then failed IM7112, will be considered for the award of the Postgraduate Diploma. Postgraduate Diploma with Distinction? Masters with Distinction: achievement of at least 70% in IM7112 and an average of at least 70% (which is weighted on the ECTS credits for each module) in all taught modules (IM7101-IM7111). A distinction cannot be awarded if a candidate has failed any module during the period of study.
URL Handbook:	TBC
Programme Director:	Professor Cliona O'Farrelly and Professor Nigel Stevenson

Programme:	**Immunotherapeutics**
School:	Biochemistry and Immunology
Award and Exit Award:	M.Sc./P.Grad.Dip
Admission Regulations:	Applicants must have a minimum of 2.1 Honours degree in any bioengineering, veterinary or biological related discipline. Medical graduates must have a MB, BCh, BAO or equivalent from a recognised medical school.
Mode of Delivery and Duration:	One year full-time.
Programme Structure:	The 90 ECTS MSc in Immunotherapeutics consists of 7 taught modules in a full-time one-year programme. Each student will also be required to undertake an industry/project placement and submit a dissertation (module 9). The 6 month research project (30 ECTS) will begin in Semester 2 when the taught modules have been completed and examined. The 30 ECTS project consists of the placement followed by a 10,000 word dissertation (30 ECTS) to .complete the MSc in Immunotherapeutics.
Assessment and Progression:	The final mark is based on a credit weighted average of the mark awarded in each module. A 50% pass mark is required for each assessment component, each of the modules, and also for the dissertation. **a) Each module must be passed independently with one compensation per module**. The final mark for each module will be the average mark derived from each of the assessment components. **b) Failure of a written personal assignment/examination**. In cases where a student fails to achieve a minimum of 50% in a written assignment or examination, a resubmission will be permitted with a deadline of 3 weeks from the publication of the initial results. Only one resubmission will be allowed, and the maximum mark awarded for the resubmitted assignment or examination is 50%. **c) Failure of a module**. Obtaining an average of 50% of the available marks derived from each assessment component employed in the module is required to pass each of the modules. Students may compensate for one fail mark in one assessment component within each module provided they achieve a minimum of 45% in that assessment and an average of at least 55% in the other assessment type(s) within the same module. **d) Compensation**. Students who fail a module but obtain 45% or more marks in that module may compensate from marks awarded for the other modules up to a total of 5%. Failure of a module on the second attempt, or failure of three or more of the taught modules in total, indicates failure of the whole programme requiring exit from the programme. Compensation is possible only on one occasion per module. Compensation is not possible for the dissertation; neither can the dissertation be used to compensate for any of the taught modules. The dissertation module must be passed in order for the student to be considered for an award of MSc degree providing all the other modules have also been passed. **Progression** a) All students register on the Masters programme. The Court of Examiners will meet at the end of the academic year to moderate examination marks related to the programme. b) Students who have successfully passed the eight taught modules of the programme and accumulated 60 ECTS but who do not wish to proceed to the dissertation stage, or if they have submitted but then failed the dissertation, will be considered for a Postgraduate Diploma. Students who have achieved an average of at least 70% of the available marks in all taught modules passed will be eligible for consideration for the award of Postgraduate Diploma with Distinction. Postgraduate Diploma with Distinction cannot be awarded if a candidate has failed any module during the period of study. *c)* A Masters dissertation will be submitted and examined in line with the *General Regulations for Taught Graduate Programmes* stated in Part B (Section 3: Examination of Dissertation) of the *University of Dublin Calendar part 3 for Graduate Studies and Higher Degrees* for a given year. d) The award of an MSc with Distinction shall require an average of at least 70% of the available marks in all taught modules and at least 70% in the project placement and dissertation module. A distinction cannot be awarded if a candidate has failed any module during the period of study.
URL Handbook:	https://www.tcd.ie/programmes/postgraduate/az/programme.php?id=DPTBI-IMTH-1F09
Programme Director:	Prof. Cliona O' Farrelly and Prof. Jerrard Hayes

Programme:	**Computer Science** - Augmented and Virtual Reality - Data Science - Future Networked Systems - Intelligent Systems
School:	Computer Science and Statistics
Award and Exit Award:	M.Sc. P.Grad.Dip
Admission Regulations:	This programme is open to graduates who have achieved the equivalent of an upper second-class Honours degree (2.1), or better, in computing or information technology. Candidates with an upper second-class Honours degree (2.1) in disciplines such as engineering, mathematics, or statistics, if they have acquired good programming skills, are also encouraged to apply. Candidates will be required to provide evidence of their computing skills and experience. Students apply for and are accepted onto a specific strand.
Mode of Delivery and Duration:	One year full-time. Two year part-time.
Programme Structure:	The MSc carries a total of 90 ECTS. Students complete 60 ECTS taught modules and a 30 ECTS dissertation.
Assessment and Progression:	The pass mark for all modules is 50%. To be permitted to proceed to the dissertation, students must achieve an overall credit-weighted average mark on taught modules of at least 50% and either (i) pass taught modules amounting to 60 ECTS credits or (ii) pass taught modules amounting to at least 50 ECTS credits and achieve a minimum mark of 40% in any failed module(s). Students who are permitted to proceed to the dissertation on the basis of (ii), are considered to have passed by compensation and are not required, nor permitted, to repeat failed modules. To qualify for the award of the M.Sc. degree, students must be permitted to proceed to the dissertation, must submit a dissertation by the prescribed date and achieve a pass mark in the dissertation. Students who achieve a final overall credit-weighted average mark of at least 70% in the taught modules and a distinction grade in the dissertation will be awarded an M.Sc. with distinction. A distinction cannot be awarded if a candidate has failed any module or passed any module by compensation during the course. Students who are not permitted to proceed to dissertation will not be eligible for the award of M.Sc. but may, at the discretion of the Court of Examiners, re-attempt failed modules, through submission of supplementary assessment(s) or by sitting supplementary examination(s), to be eligible for the award of Postgraduate Diploma in Computer Science. Students who are permitted to proceed to the dissertation but do not submit a dissertation, or who do not achieve a pass grade in their dissertation, will be eligible for the award of a Postgraduate Diploma in Computer Science. To qualify for the award of Postgraduate Diploma students must achieve an overall credit-weighted average mark on taught modules of at least 50% and either (i) pass taught modules amounting to 60 ECTS credits or (ii) pass taught modules amounting to at least 50 ECTS credits and have a mark of not less than 40% in any failed module. Students who qualify on the basis of (ii) above are considered to have passed by compensation and are not required, nor permitted, to repeat failed modules. Students who achieve an overall average mark of 70% or above for the taught modules will be awarded a Postgraduate Diploma with Distinction. A distinction cannot be awarded if a candidate has failed any taught module, passed any module by compensation during the course, or has failed the dissertation.
URL Handbook:	The Programme Handbook is available from the course website at the following link: https://www.scss.tcd.ie/postgraduate/msc-cs/Local/registered/index.php
Programme Director:	Prof. Doug Leith (director) and Prof. John Dingliana (co-director for admissions)

Programme:	**Interactive Digital Media**
School:	Computer Science and Statistics
Award and Exit Award:	M.Sc. P.Grad.Dip
Admission Regulations:	Applications will be accepted from good Honours Bachelor graduates in any discipline, or with relevant work experience.
Mode of Delivery and Duration:	One year full-time.
Programme Structure:	The M.Sc. carries 90 ECTS. Students complete 60 ECTS taught modules (including a 10 ECTS Research Paper) and a 30 ECTS Summer Research Project, which leads to a multimedia installation.
Assessment and Progression:	To be allowed to proceed to the Research Project (30 ECTS) leading to the degree of M.Sc. in Interactive Digital Media, candidates must (i) achieve an overall mark of at least 50% in the credit-weighted average mark for all taught modules, and (ii) for modules amounting to not less than 50 credits, to include the Research Paper, achieve a mark of at least 50% in each individual module and for modules amounting to not more than 10 credits achieve a mark of not less than 40% in each individual module. Students who fail one or more modules or who fail the Research Paper, may, at the discretion of the Court of Examiners, re-attempt through submission of supplementary assessment(s) by an appointed date or by sitting supplementary examination(s). The maximum mark awarded for supplementary assessment or examinations is 50%. To complete their Research Project satisfactorily, students must submit their Research Project by the prescribed date and must obtain a passing mark of 50% in their Research Project. The Research Project is assessed in compliance with research dissertation regulations. The final mark for the programme is based on a credit-weighted average of the mark awarded in each module, including the Research Project. In order to qualify for the award of M.Sc. with Distinction, students must, as a minimum, achieve a mark of 70% or above in the Research Project, and achieve at least 68% in the unrounded overall average mark for the taught modules and, for modules amounting to not less than half of the required credits for the taught component of the programme, achieve a minimum mark of 70% in each individual module. A Distinction cannot be awarded if a candidate has failed any credit during the programme. Students who pass the required modules and the Research Paper, but who are not permitted to or otherwise do not submit a Research Project, or who do not satisfactorily complete their Research Project, will be eligible for the award of a Postgraduate Diploma in Computer Science. The Postgraduate Diploma with Distinction is awarded to students who achieve at least 68% in the unrounded overall average mark for the taught modules and achieve a minimum mark of 70% in individual modules which together amount to at least half of the required credits for the award of the Postgraduate Diploma associated with the student's registered programme.
URL Handbook:	The Programme Handbook is available from the Programme Director.
Programme Director:	Professor Mads Haahr

Programme:	**Statistics and Data Science Online**
School:	Computer Science and Statistics
Award and Exit Award:	Postgraduate Certificate in Statistics and Data Science/Postgraduate Diploma Top Up in Statistics and Data Science and Masters Top Up in Statistics and Data Science
Admission Regulations:	Admission to these programmes is only through admission to the Postgraduate Certificate. There is no direct entry into the Diploma. The part-time online Postgraduate Certificate (30 ECTS) is normally restricted to graduates who have achieved an undergraduate degree in any area. In addition, candidates must demonstrate competence in mathematics to a level equivalent to having passed mathematics at Leaving Certificate level, an introductory module on mathematics in their Bachelor degree, or to have demonstrated experience of the use of mathematical methods, for example in their career. Applicants whose English is not their first language and who have not been educated through the medium of English must present a qualification in the English language that meets the current requirement for a postgraduate programme in Trinity College (IELTS, TOEFL, etc.) Upon completion of Postgraduate Certificate students can leave with a postgraduate certificate award or can progress to a one year part-time Postgraduate Diploma Top Up year 2.
Mode of Delivery and Duration:	This programme is delivered completely online. The postgraduate Certificate is a 1-year part-time programme. The Diploma Top Up year is a second year part-time. The Masters is a third year part-time.
Programme Structure:	The Postgraduate Certificate year consists of 30 ECTS, divided into 4 modules. In semester 1, these are Introduction to statistical methods and concepts (10 ECTS) and Implementing statistical methods in R (5 ECTS). In semester 2 these are Linear Regression (10 ECTS) and Foundations of Data Science 1 (5 ECTS). The Postgraduate Diploma Top Up year consists of 30 ECTS, divided into 6 modules. In semester 1, these are Advanced linear models 1 (5 ECTS), Introduction to experimental design (5 ECTS) and Foundations of data science 2 (5 ECTS). In Semester 2, these are Advanced linear models 2 (5 ECTS), Time series (5 ECTS) and Multivariate analysis (5 ECTS). The Masters Top-Up consists of 30 ECTS, taken up entirely with research for a dissertation.
Assessment and Progression:	Each module is examined separately. The pass mark for each module is 50%, The overall mark for the course is the credit-weighted average of the marks awarded for each module. Each year is passed by passing all modules in that year (30 ECTS). Students who pass the Postgraduate Certificate year are eligible for the award of the Postgraduate Certificate. Those students who achieve at least 68% in the overall credit-weighted average mark and achieve a minimum mark of 70% in individual modules which together amount to at least half of the required credits for the award of the Postgraduate Diploma will be awarded the PG Certificate with Distinction. Students who are eligible for the award of Postgraduate Certificate are eligible for progression to the Diploma Top Up year. Students who pass the second year are eligible for the award of a Postgraduate Diploma. Those students who achieve at least 68% in the overall credit-weighted average mark and achieve a minimum of 70% in individual modules which together amount to at least half of the required credits for the award of the Postgraduate Diploma will be awarded the PG Diploma with Distinction. Students who are eligible for the award of Postgraduate Diploma are eligible for progression to the Masters Top Up year. Students who pass the third year are eligible for the award of a Master of Science. Those students who achieve at least 68% in the overall credit-weighted average mark and achieve a minimum of 70% in individual modules which together amount to at least half of the required credits for the award of the Master of Science will be awarded the Master of Science with Distinction. Distinctions are not awarded at the supplemental examinations. Students who are unsuccessful in the assessment of a taught module may be allowed to take a supplemental assessment. Where a module is assessed by continuous assessment only, the supplemental examination will take the form of an additional summative assessment. Where the initial assessment has an examination component, this may be in the form of a supplemental examination. Students who fail a supplemental exam may repeat the year. This may be done only once.
URL Handbook:	see https://www.tcd.ie/scss/courses/postgraduate/pg-cert-dip--msc-in-statistics-and-data-science-online/
Programme Director:	Professor Simon Wilson

Programme:	**Statistics and Sustainability**
School:	Computer Science and Statistics
Award and Exit Award:	M.Sc and P. Grad. Dip. (exit)
Admission Regulations:	Applicants will be expected to have an Honours Bachelor degree at 2.1 or above, and must have at least one year of university-level mathematics, including linear algebra and calculus topics.
Mode of Delivery and Duration:	Blended delivery 80% classroom, 20% online across all ECTS options; will vary depending on options selected.
Programme Structure:	The MSc carries a total of 90 ECTS. Students complete 60 ECTS taught modules and a 30 ECTS dissertation.
Assessment and Progression:	The final mark is based on a credit-weighted average of the mark awarded in each module. The pass mark for all modules is 50%. 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-compensatable, and c) achieve a pass mark in the research element or dissertation. Students failing to pass individual taught modules may present for supplemental examination or re-submit required work. It is permitted to present for supplemental examination or re-submit required work in up to two taught modules. It is permitted to pass by compensation in one taught module that falls below the pass mark of 50%; the threshold for compensation in such a situation is 40%. The 'Foundations of Statistics' module is excluded from this and must be passed outright. Students failing to meet the above requirements will not be permitted to proceed to the dissertation. 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 in the following academic year. 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 the course in the following academic year. Alternatively, such students may be awarded an associated Postgraduate Diploma. In order to qualify for the award of Masters with Distinction students must not have failed any assessment component during the period of study and must as a minimum, achieve a final overall average mark for the course of at least 70% and a mark of at least 70% in the dissertation or research element. In order to qualify for the award of Postgraduate Diploma with Distinction students must not have failed any assessment component during the period of study and must as a minimum achieve an overall credit-weighted average mark of at least 70% across all modules.
URL Handbook:	TBC
Programme Director:	Arthur White

Programme:	**Applied Building Repair and Conservation**
School:	Engineering
Award and Exit Award:	P. Grad. Dip.
Admission Regulations:	The normal entry requirement for this programme is an Honours Bachelor degree in civil engineering or related discipline.
Mode of Delivery and Duration:	One year part-time.
Programme Structure:	The P. Grad. Dip. Carries 45 ECTS.
Assessment and Progression:	The pass mark for all elements is 40%. Each element contributes equally to the overall mark in accordance with their credit weighting. To qualify for the award of the Postgraduate Diploma, students must pass each module and the project and achieve an overall mark of at least 40%. There is no system of compensation. A student who fails a module or modules may re-sit the relevant module(s) during the supplemental examination session. Failed coursework/project work must be re-submitted. A Distinction is awarded to those who, in addition, obtain an overall average mark of 70% or more across the three modules. A Distinction cannot be awarded if a candidate has failed any credit during the programme.
URL Handbook:	The Programme Handbook is available from the Programme Director.
Programme Director:	Professor Sara Pavia

Programme:	**Climate Adaptation Engineering**
School:	School of Engineering
Award and Exit Award:	M.Sc. P.Grad.Dip
Admission Regulations:	Admission to the course is competitive. Applicants will be expected to have an Honours Bachelor's degree at 2.1 or above, in a STEM (science, technology, engineering or mathematics), architecture, urban planning, or a related cognate discipline. Well-qualified candidates or industry professionals from other numerate disciplines who have attained knowledge and experience and knowledge, may also be considered for admission purposes subject to the decision of the Dean of Graduate Studies.
Mode of Delivery and Duration:	Blended delivery (90% classroom, 10% online (some variation depending on options selected). 1 year full-time.
Programme Structure:	The course incorporates both taught and practical components. Students undertake a significant independent research project based on original research or reflecting experiential learning that is presented in the form of a dissertation. The course comprises 90 credits consisting of 60 credits of taught modules, and 30 credits of dissertation work.

Assessment and Progression:	1. The final mark is based on a credit-weighted average of the mark awarded in each module. 2. The pass mark on this course is 50% and above. 3. Students must obtain credit for the academic year of their course by satisfactory completion of all course requirements. 4. Students may compensate for failed mark in up to 10 ECTS of modules provided that the overall credit-weighted average mark across all modules is 50% or over, and students have passed taught modules amounting to at least 50 credits and have a mark of not less than 40% in the failed module. Students must achieve a mark of 50% or over in the research project in order to pass the Masters course as a whole. 5. To qualify for the Masters 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-compensatable, and c) achieve a pass mark in the research element or dissertation. 6. 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. Final results are determined at the final Court of Examiners' meeting at the end of the academic year with the external examiner input. 7. 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 of Engineering for permission to repeat it. 8. Students on a Masters course who do not achieve a pass mark in the research element/ dissertation/industry-led climate adaptation research project but achieve a mark within the range of 40-49% may make one application to the School to repeat this section of their programme. Marks for a new submission will be capped at 50%. Resubmitted research elements must be submitted before the next examination session at a date determined and published by the School. Alternatively, and where this is provided for in the Course regulations, such students may be awarded an associated Postgraduate Diploma upon the successful completion of all taught components (equivalent to 60 ECTS). 9. In order to qualify for the award of Masters with Distinction students must have not failed any assessment component during the period of study and must as a minimum, achieve a final overall average mark for the course of at least 70%, and a mark of at least 70% in the dissertation or research element. 10. In order to qualify for the award of Postgraduate Diploma with Distinction students must not have failed any component during the period of study and must as a minimum achieve an overall credit-weighted average mark of at least 70% across all modules. 11. All postgraduate examination results are published anonymously under a student's registered number. 12. Students who successfully complete their programme will have the qualification, where appropriate, awarded within grade. 13. Supplemental re-assessment/examinations: (i) There is no compensation permitted across modules. (ii) Supplemental re-assessment/examinations: Subject to the recommendation of the Court of Examiners, students who are unsuccessful in the annual examinations may be allowed a supplemental examination. This examination may take the form of an additional summative assessment. Where a module is assessed by continuous assessment only, the supplemental examination may also take the form of an additional summative assessment.
URL Handbook:	https://www.tcd.ie/civileng/programmes/postgraduate/msc-in-climate-adaptation-engineering-/
Programme Director:	Assistant Professor Rui Teixeira

Programme:	**Biomedical Engineering**
School:	Engineering
Award and Exit Award:	M.Sc. P. Grad. Dip.

Admission Regulations:	Candidates for this programme must hold an upper second-class Honours Bachelor degree in engineering, physical sciences, mathematics or a cognate discipline, or hold appropriate qualifications in engineering with at least three years professional experience, and satisfy the programme committee that they have a sufficient understanding of the fundamentals of medical science. Applicants from a medical or life sciences background are also encouraged to apply provided they have proven mathematical ability.
Mode of Delivery and Duration:	One year full-time.
Programme Structure:	The M.Sc. carries 90 ECTS. Candidates take 50 ECTS taught modules and must complete a research dissertation which carries 40 ECTS.
Assessment and Progression:	The pass mark for all elements is 50%. The overall mark for the programme is the credit-weighted average of the mark awarded for each module. To pass the taught modules students must achieve an overall average mark on taught modules of at least 50% and pass taught modules amounting to 50 ECTS credits. In the event a student has failed up to 10 ECTS of taught modules it may be possible to "pass by compensation". To "pass by compensation" a student must (i) achieve an overall credit-weighted average mark of at least 50% AND (ii) achieve a pass mark in taught modules carrying a minimum of 40 credits AND (iii) obtain a module mark of at least 40% in any remaining module(s). Students who have failed the taught modules (by virtue of not achieving the overall average mark of 50% and/or not passing taught modules amounting to 50 ECTS credits) may be re-assessed within the academic year with the agreement of the course coordinator. Re-assessment is only available for failed modules amounting to 20 ECTS where at most 15 ECTS of modules were failed in any one semester and none of these modules could have been compensated. Different modalities of assessment are permitted in the reassessment session as determined by the programme. The same compensation regulations apply to reassessed modules as outlined above. To qualify for the award of the MSc degree, students must submit a dissertation and achieve a pass mark in both the dissertation and the taught modules. Students who are unable to pass the taught modules even following re-assessments will not be allowed to submit a dissertation but may be eligible for the postgraduate diploma. The postgraduate diploma can only be awarded where the student has completed 60 ECTS of taught modules. Therefore, in order to obtain the award of a postgraduate diploma, a student will be required to undertake a further 10 ECTS module. An optional Engineering Project module may be taken to enable this. This option will be available from the start of the second semester, for students intending to proceed to the Postgraduate Diploma award. Whereby a student fails the research thesis it may be submitted as an Engineering Project (10ECTS) and assessed for the awarding of a Postgraduate Diploma. In order to qualify for a Masters with Distinction, students must achieve an overall average mark of 70% or above in both the taught modules at the first sitting AND the research dissertation. A Distinction cannot be awarded if a candidate has failed any credit during the programme.
URL Handbook:	https://www.tcd.ie/biomedicalengineering/education/msc/current-students-/
Programme Director:	Associate Professor Mark Ahearne

Programme:	**Construction Law and Contract Administration**
School:	Engineering
Award and Exit Award:	P. Grad. Dip.
Admission Regulations:	The normal minimum entry requirement for this programme is an Honours Bachelor degree in civil engineering or another suitable professional qualification, including a law qualification. A minimum of three years post-graduation experience in the construction sector is also required.
Mode of Delivery and Duration:	One year part-time.
Programme Structure:	The P. Grad. Dip. Carries 45 ECTS.
Assessment and Progression:	Assessment is by examination and coursework. The pass mark for all elements is 40%. The overall mark for the programme is the credit-weighted average of the mark awarded for each module. To qualify for the award of the Postgraduate Diploma students must pass all elements of the programme amounting to 45 credits and achieve an overall average mark of at least 40%. A student who fails a module or modules may re-sit the relevant module(s) during the supplemental examination session. Failed coursework/project work must be re-submitted by the deadline indicated in the programme handbook. The Postgraduate Diploma with Distinction may be awarded to students who, in addition, achieve an overall average mark of 70% or above. A Distinction cannot be awarded if a candidate has failed any credit during the programme.
URL Handbook:	The Programme Handbook is available from the Programme Director.
Programme Director:	Mr Thomas Grey

Programme:	**Electronic Information Engineering**
School:	Engineering
Award and Exit Award:	M.Sc.

Admission Regulations:	Candidates for this programme must normally hold a first or second class, upper division Honours Bachelor degree in Engineering, Science or a cognate discipline.
Mode of Delivery and Duration:	The M.Sc. in Electronic Information Engineering consists of taught modules over two Semesters amounting to 60 credits and a project worth 30 credits. This is a 12 month Masters Programme, one year full-time, two years part-time.
Programme Structure:	The M.Sc. carries 90 ECTS, 60 credits in taught modules and a project of 30 credits.
Assessment and Progression:	The pass mark for all elements is 50%. The overall mark for the programme is the credit-weighted average of the mark awarded for each module. To pass the taught modules students must achieve an overall average mark on taught modules of at least 50% and pass taught modules amounting to 60 ECTS credits. In the event a student has failed up to 20 ECTS of taught modules it may be possible to "pass by compensation". To "pass by compensation" a student must (i) achieve and overall credit-weighted average mark of at least 50% AND (ii) achieve a pass mark in taught modules carrying a minimum of 40 credits AND (iii) obtain a module mark of at least 40% in any remaining module(s). Students who have failed the taught modules (by virtue of not achieving the overall average mark of 50% and/or not passing taught modules amounting to 50 ECTS credits) may be re-assessed within the academic year with the agreement of the course coordinator. Re-assessment is only available for failed modules amounting to 20 ECTS where at most 15 ECTS of modules were failed in any one semester and none of these modules could have been compensated. Different modalities of assessment are permitted in the reassessment session as determined by the programme. The same compensation regulations apply to reassessed modules as outlined above. To qualify for the award of the MSc degree, students must submit a dissertation and achieve a pass mark in both the dissertation and the taught modules. Students who fail more than 20 ECTS of the taught modules on the first sitting will not be eligible to submit a dissertation. Hence, they will not be eligible for the award of the MSc but may be eligible for the award of the P.Grad.Dip. The postgraduate diploma can only be awarded where the student has completed 60 ECTS of taught modules. Therefore, in order to obtain the award of a postgraduate diploma, a student will be required to undertake a further 10 ECTS module. An optional Engineering Project module may be taken to enable this. This option will be available from the start of the second semester, for students intending to proceed to the Postgraduate Diploma award. Whereby a student fails the research thesis it may be submitted as an Engineering Project (10ECTS) and assessed for the awarding of a Postgraduate Diploma. In order to qualify for a Masters with Distinction, students must as a minimum a) pass all taught modules, b) achieve a final overall average mark for the programme of at least 70% and c) achieve a mark of at least 70% in the dissertation. A Distinction cannot be awarded if a candidate has failed any credit during the programme.
URL Handbook:	https://www.tcd.ie/eleceng/postgraduate/MSc/assessment/
Programme Director:	Prof. Anil Kokaram

Programme:	**Electronic Information Engineering (including the Computational Engineering strand)**
School:	Engineering
Award and Exit Award:	M.Sc and P.Grad.Dip. (exit)

Admission Regulations:	Admission is normally restricted to graduates who have achieved an upper second class honours degree (2.1), or better, in engineering, science, computing, statistics, mathematics or a related discipline. Well-qualified candidates or industry professionals from other numerate disciplines who have sufficient knowledge of computational aspects of engineering and science, may also be considered.
Mode of Delivery and Duration:	One year full-time, or two to three years part-time. Face-to-face delivery with some hybrid elements.
Programme Structure:	MSc students will complete 90 ECTS, 60 credits in taught modules and a research project of 30 credits. Part-time students have a number of options through staged awards: The full-time P.Grad.Dip. in Year 1, followed by an upgrade to MSc in year 2, is the preferred part-time route. A three year part-time route is also available, for students to complete P.Grad.Cert (30 ECTS) in Year 1, P.Grad.Dip. upgrade (additional 30 ECTS) in Year 2, and M.Sc upgrade (Master's Project 30 ECTS) in Year 3. All MSc students are required to take four mandatory modules (including the 30 ECT research project) which total 55 ECTS. In addition, candidates select a further 35 credits from 15 other module options to bring their total credits to 90: Students may opt for the strand in Computational Engineering. In this strand, students must select in addition, at least 15 ECTS out of the optional 35 ECTS from four Computational Engineering Modules. Some of the module options may be withdrawn from time to time and some new modules may be added, subject to demand.
Assessment and Progression:	Assessments are based on both practical assignments and laboratories as well as written examinations. The pass mark for each module is 50% and the overall mark for the programme is the credit weighted average of the mark awarded for each module. Interim module marks are published at the end of each semester. Final results are determined at a Court of Examiners' meeting with the external examiner present. Module assessments and dissertation are subject to external moderation. To qualify for the award of the MSc degree, students must submit a project report by the prescribed date and achieve a pass mark in the report and pass the taught modules. Students who fail more than 20 ECTS of the taught modules on the first sitting will not be eligible to submit the project report. Hence, they will not be eligible for the award of the MSc but may be eligible for the exit award of the P.Grad.Dip. upon completion of 60 ECTS. To pass the taught modules students must achieve an overall average mark on taught modules of at least 50% and pass taught modules amounting to 60 ECTS credits. In the event a student has failed up to 20 ECTS of taught modules it may be possible to "pass by compensation". To "pass by compensation" a student must (i) achieve an overall credit-weighted average mark of at least 50% AND (ii) achieve a pass mark in taught modules carrying a minimum of 40 ECTS AND (iii) obtain a module mark of at least 40% in any remaining module(s). Students who have failed the taught modules (by virtue of not achieving the overall average mark of 50% and/or not passing taught modules amounting to 60 ECTS credits) may be re-assessed within the academic year with the agreement of the course coordinator. Re-assessment is only available for failed modules amounting to 20 ECTS where at most 15 ECTS of modules were failed in any one semester and none of these modules could have been compensated. Different modalities of assessment are permitted in the reassessment session as determined by the programme. The same compensation regulations apply to reassessed modules as outlined above. Module marks for reassessed modules are not capped. 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 out right or by compensation) will be deemed to have failed overall and may apply to repeat the course. 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 with 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 which are compensated are considered as passed in this situation. Completion of Computational Engineering Strand To complete the Computational Engineering Strand students must pass at least 10 ECTS of modules (out of the 15 ECTS strand components) in the Computational Engineering strand.
URL Handbook:	https://www.tcd.ie/elecent/teaching/postgraduate/electronic-information-engineering/assessment
Programme Director: **Programme Coordinator:**	Prof. Anil Kokaram Prof. Biswajit Basu

Programme:	**Electronic Information Engineering (including the Computational Engineering strand)**
School:	Engineering
Attainment Awards/Exit Award:	P.Grad.Dip / no exit award
Admission Regulations:	Admission is normally restricted to graduates who have achieved an upper second class honours degree (2.1), or better, in engineering, science, computing, statistics, mathematics or a related discipline. Well-qualified candidates or industry professionals from other numerate disciplines who have sufficient knowledge of computational aspects of engineering and science, may also be considered.
Mode of Delivery & Duration:	The P.Grad.Dip is completed in one year full-time, or two years part-time. Face-to-face delivery with some hybrid elements.
Programme Structure:	Students on the programme complete 60 ECTS in taught modules. Part-time students can avail of a staged award via P.Grad.Cert (30 ECTS in Year 1) to P.Grad.Dip. upgrade (additional 30 ECTS in Year 2). All students (P.Grad.Dip.) are required to take the three mandatory modules worth a total of 25 ECTS: In addition, candidates select a further 35 credits from 15 other module options to bring their total credits to 60 ECTS. Students may opt for the strand in Computational Engineering. In this strand, students must select in addition, at least 15 ECTS out of the optional 35 ECTS, from the Computational Engineering modules. Some of the module options may be withdrawn from time to time and some new modules may be added, subject to demand.
Assessment and Progression:	Assessments are based on both practical assignments and laboratories as well as written examinations. The written report required for the Master's Projects is assessed by two readers who agree on a final mark. The pass mark for each module is 50% and the overall mark for the programme is the credit weighted average of the mark awarded for each module. Interim module marks are published at the end of each semester. Final results are determined at a Court of Examiners' meeting with the external examiner present. Module assessments and dissertation are subject to external moderation. . To pass the taught modules students must achieve an overall average mark on taught modules of at least 50% and pass taught modules amounting to 60 ECTS credits. In the event a student has failed up to 20 ECTS of taught modules it may be possible to "pass by compensation". To "pass by compensation" a student must achieve an overall credit-weighted average mark of at least 50% AND

	(ii) achieve a pass mark in taught modules carrying a minimum of 40 ECTS AND (iii) obtain a module mark of at least 40% in any remaining module(s). Students who have failed the taught modules (by virtue of not achieving the overall average mark of 50% and/or not passing taught modules amounting to 60 ECTS credits) may be re-assessed within the academic year with the agreement of the course coordinator. Re-assessment is only available for failed modules amounting to 20 ECTS where at most 15 ECTS of modules were failed in any one semester and none of these modules could have been compensated. Different modalities of assessment are permitted in the reassessment session as determined by the programme. The same compensation regulations apply to reassessed modules as outlined above. Module marks for reassessed modules are not capped. Students who do not pass the taught modules (either out right or by compensation) will be deemed to have failed overall and may apply to repeat the course. . P.Grad.Dip (exit award) The Postgraduate Diploma may be awarded with 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 which are compensated are considered as passed in this situation. Completion of Computational Engineering Strand To complete of the Computational Engineering Strand at the postgraduate diploma students must pass at least 10 ECTS of modules (out of the 15 ECTS strand components) in the Computational Engineering strand with a mark of at least 50%.
URL Handbook:	TBC
Programme Director: **Programme Coordinator:**	Prof. Anil Kokaram Prof. Biswajit Basu

Programme:	**Electronic Information Engineering (including the Computational Engineering strand)**
School:	Engineering
Attainment Awards/Exit Award:	P.Grad.Cert.
Admission Regulations:	Admission is normally restricted to graduates who have achieved an upper second class honours degree (2.1), or better, in engineering, science, computing, statistics, mathematics or a related discipline. Well-qualified candidates or industry professionals from other numerate disciplines who have sufficient knowledge of computational aspects of engineering and science, may also be considered.
Mode of Delivery & Duration:	One year part-time. Face-to-face delivery with some hybrid elements.

Programme Structure:	P.Grad.Cert. students will complete 30 ECTS in taught modules. P.Grad.Cert. students have the option to upgrade to the P.Grad.Dip. (additional 30 ECTS in Year 2) and upgrade to the M.Sc. (Project 30 ECTS) in year 3. All students are required to take three mandatory modules worth 25 ECTS. In addition, candidates select a further 5 credits from the 12 other module options to bring their total credits to 30: Students may opt for the strand in Computational Engineering. In this strand, students must select the additional 5 ECTS from the two Computational Engineering 5ECTS modules. Some of the module options may be withdrawn from time to time and some new modules may be added, subject to demand.
Assessment and Progression:	Assessments are based on both practical assignments and laboratories as well as written examinations. The pass mark for each module is 50% and the overall mark for the programme is the credit weighted average of the mark awarded for each module. Interim module marks are published at the end of each semester. Final results are determined at a Court of Examiners' meeting with the external examiner present. Module assessments are subject to external moderation. To qualify for the award of the P.Grad.Cert., students must pass the taught modules. To pass students must achieve an overall average mark on taught modules of at least 50% and pass taught modules amounting to 20 ECTS credits. In the event a student has failed up to 10 ECTS of taught modules it may be possible to "pass by compensation". To "pass by compensation" a student must (i) achieve an overall credit-weighted average mark of at least 50% AND (ii) achieve a pass mark in taught modules carrying a minimum of 20 ECTS AND (iii) obtain a module mark of at least 40% in any remaining module(s). Students who have failed the taught modules (by virtue of not achieving the overall average mark of 50% and/or not passing taught modules amounting to 30 ECTS credits) may be re-assessed within the academic year with the agreement of the course coordinator. Re-assessment is only available for failed modules amounting to 15 ECTS where at most 10 ECTS of modules were failed in any one semester and none of these modules could have been compensated. Different modalities of assessment are permitted in the reassessment session as determined by the programme. The same compensation regulations apply to reassessed modules as outlined above. Module marks for reassessed modules are not capped. In order to qualify for the award of P.Grad.Cert. with Distinction students must as a minimum (i) pass all taught modules and (ii) achieve a final overall average mark of at least 70% 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 will be deemed to have failed overall and may apply to repeat the course. Students may opt to be considered for a Postgraduate Certificate by applying to the Course Coordinator in writing before the end of April. **Postgraduate Certificate award** Where a student achieves a pass, outright or by compensation, in 30 ECTS of taught modules and has an overall average mark of at least 50% for those 30 ECTS, she or he may be eligible for the award of a Postgraduate Certificate. The Postgraduate Certificate may be awarded with Distinction to candidates who, in addition, achieve an overall average mark of at least 70% across the 30 ECTS modules. In order to qualify for the award of Postgraduate Certificate with Distinction students must as a minimum (i) pass taught modules of 30 ECTS and (ii) achieve a final overall average mark (taught modules of 30 ECTS) of at least 70%. **Completion of Computational Engineering Strand** To complete the Computational Engineering Strand at the postgraduate certificate level students must pass at least 5 ECTS of modules in the Computational Engineering strand with a mark of at least 50%.
URL Handbook:	**TBC**
Programme Director: **Programme Coordinator:**	Prof. Anil Kokaram Prof. Biswajit Basu

Programme:	**Engineering** - Environmental Engineering - Structural and Geotechnical Engineering - Transport Engineering, Policy and Planning - Sustainable Energy
School:	Engineering
Award and Exit Award:	M.Sc. P. Grad. Dip.
Admission Regulations:	Candidates for this programme must normally hold a first or second class, first division Honours Bachelor degree in Engineering, Science or a cognate discipline.

Mode of Delivery and Duration:	One year full-time. Two year part-time.
Programme Structure:	The M.Sc. carries 90 ECTS. Candidates take taught modules (60ECTS) and complete a research dissertation (30ECTS).
Assessment and Progression:	The pass mark for all elements is 50%. The overall mark for the programme is the credit-weighted average of the mark awarded for each module. To pass the taught modules students must achieve an overall average mark on taught modules of at least 50% and pass taught modules amounting to 60 ECTS credits. In the event a student has failed up to 10 ECTS of taught modules it may be possible to "pass by compensation". To "pass by compensation" a student must (i) achieve an overall credit-weighted average mark of at least 50% AND (ii) achieve a pass mark in taught modules carrying a minimum of 50 credits AND (iii) obtain a module mark of at least 40% in any remaining module(s). Students who have failed the taught modules (by virtue of not achieving the overall average mark of 50% and/or not passing taught modules amounting to 60 ECTS credits) may be re-assessed within the academic year with the agreement of the course coordinator. Re-assessment is only available for failed modules amounting to 20 ECTS where at most 15 ECTS of modules were failed in any one semester and none of these modules could have been compensated. Different modalities of assessment are permitted in the reassessment session as determined by the programme. The same compensation regulations apply to reassessed modules as outlined above. To qualify for the award of the MSc degree, students must submit a dissertation and achieve a pass mark in both the dissertation and the taught modules. Students who are unable to pass the taught modules even following re-assessments will not be allowed to submit a dissertation but may be eligible for the postgraduate diploma. The postgraduate diploma can only be awarded where the student has completed 60 ECTS of taught modules. In order to qualify for a Masters with Distinction, students must achieve an overall average mark of 70% or above in both the taught modules AND the research dissertation. A Distinction cannot be awarded if a candidate has failed any credit during the programme.
URL Handbook:	https://www.tcd.ie/civilent/programmes/postgraduate/msc-in-engineering/
Programme Director:	Professor David O'Connell

Programme:	**Fire Safety Practice (Buildings and other Structures)**
School:	Engineering
Award and Exit Award:	P. Grad. Dip
Admission Regulations:	The normal minimum entry requirement for this programme is an Honours Bachelor degree in civil engineering or architecture or another related discipline.
Mode of Delivery and Duration:	One year part-time.
Programme Structure:	The P. Grad. Dip carries 45 ECTS.
Assessment and Progression:	Assessment is by examination and coursework. The pass mark for all elements is 40%. The overall mark for the programme is the credit-weighted average of the mark awarded for each module. To qualify for the award of the Postgraduate Diploma students must pass all elements of the programme amounting to 45 credits and achieve an overall average mark of at least 40%. A student who fails a module or modules may re-sit the relevant module(s) during the supplemental examination session. Failed coursework/project work must be re-submitted by the Friday before the supplemental examinations are held. The Postgraduate Diploma with Distinction may be awarded to students who, in addition, achieve an overall average mark of 70% or above. A Distinction cannot be awarded if a candidate has failed any credit during the programme.
URL Handbook:	The Programme Handbook is available from the Programme Director.
Programme Director:	Mr. Thomas Grey

Programme:	**Master in Engineering (M.A.I. (Ind.))**
School:	Engineering
Award and Exit Award:	M.A.I.
Admission Regulations:	Applicants for the Research Master in Engineering (M.A.I. (Ind.)) degree must be engineering graduates and hold a University of Dublin B.A.I./B.Sc.(Ing.) degree with three years' experience in practice as a professional engineer OR hold, in addition to their primary qualification, a combination of two Trinity College Dublin Postgraduate Diplomas offered by the School of Engineering and approved by the Director of Teaching and Learning (Postgraduate). In addition to the above requirements, applicants taking the first route must hold a minimum 2.2 grade University of Dublin B.A.I./B.Sc.(Ing.) degree while applicants taking the second route must hold a minimum 2.2 grade on a level 8 engineering degree.
Mode of Delivery and Duration:	Two years part-time.
Programme Structure:	The M.A.I. degree carries 120 credits.

Assessment and Progression:	The candidate is required to prepare a dissertation on a research project carried out in his/her professional environment. The work is to be carried out to academic criteria and should include some contribution to knowledge. It will be supervised by a member of academic staff from the School of Engineering. The agreement, in writing, of a person in authority from the candidate's workplace to carry out this research will normally be required. The award of Master in Engineering (M.A.I. (Ind.)) degree will be based on a dissertation submitted by a suitably qualified engineering graduate. The candidate is required to submit two bound copies of his/her dissertation and will normally be asked to undergo a *viva voce* examination on the subject matter of the dissertation. The dissertation should be submitted at the end of the second year of registering for the degree. Approval of the Dean of Graduate Studies is required for registration and continuation to a third year and may require payment of additional registration fees.
URL Handbook:	The Programme Handbook is available from the Programme Director.
Programme Director:	Professor Brendan O'Kelly

Programme:	**Mechanical Engineering**
School:	Engineering
Award and Exit Award:	M.Sc. P. Grad. Dip
Admission Regulations:	Candidates for this programme must normally hold a first or second class, first division Honours Bachelors' degree in engineering or a cognate discipline.
Mode of Delivery and Duration:	One year full-time. Two years part-time.
Programme Structure:	The M.Sc. in Mechanical Engineering carries 90 ECTS. Candidates take 50 ECTS taught modules and complete a 40 ECTS research project. The P. Grad. Dip carries 60 ECTS taught modules.

Assessment and Progression:	The pass mark for all elements is 50%.The overall mark for the programme is the credit-weighted average of the mark awarded for each module. To pass the taught modules students must achieve an overall average mark on taught modules of at least 50% and pass taught modules amounting to 50 ECTS credits. In the event a student has failed up to 10 ECTS of taught modules it may be possible to "pass by compensation". To "pass by compensation" a student must (i) achieve an overall credit-weighted average mark of at least 50% AND (ii) achieve a pass mark in taught modules carrying a minimum of 40 credits AND (iii) obtain a module mark of at least 40% in any remaining module(s). Students who have failed the taught modules (by virtue of not achieving the overall average mark of 50% and/or not passing taught modules amounting to 50 ECTS credits) may be re-assessed within the academic year with the agreement of the course coordinator. Re-assessment is only available for failed modules amounting to 20 ECTS where at most 15 ECTS of modules were failed in any one semester and none of these modules could have been compensated. Different modalities of assessment are permitted in the reassessment session as determined by the programme. The same compensation regulations apply to reassessed modules as outlined above. To qualify for the award of the MSc degree, students must submit a dissertation and achieve a pass mark in both the dissertation and the taught modules. Students who are unable to pass the taught modules even following re-assessments will not be allowed to submit a dissertation but may be eligible for the postgraduate diploma. The postgraduate diploma can only be awarded where the student has completed 60 ECTS of taught modules. Therefore, in order to obtain the award of a postgraduate diploma, a student will be required to undertake a further 10 ECTS module. An optional Engineering Project module may be taken to enable this. This option will be available from the start of the second semester, for students intending to proceed to the Postgraduate Diploma award. Whereby a student fails the research thesis it may be submitted as an Engineering Project (10 ECTS) and assessment for the awarding of a Postgraduate Diploma. In order to qualify for a Masters with Distinction, students must achieve an overall average mark of 70% or above in both the taught modules AND the research dissertation. A Distinction cannot be awarded if a candidate has failed any credit during the programme.
URL Handbook:	The Programme Handbook is available from the Programme Director.
Programme Director:	Professor David Taylor

Programme:	**Mechanical Engineering (including the Zero Carbon Technology strand)**
School:	Engineering
Award and Exit Award:	Attainment award: M.Sc Exit award: P.Grad.Dip.
Admission Regulations:	Admission is normally restricted to graduates who have achieved an upper second class honours degree (2.1), or better, in engineering, science, computing, statistics, mathematics or a related discipline. Well-qualified candidates or industry professionals from other numerate disciplines who have sufficient knowledge of engineering and science, may also be considered.
Mode of Delivery and Duration:	One year full-time, or two to three years part-time. Face-to-face delivery with some blended elements. The programme also includes a strand in Zero Carbon Technology.
Programme Structure:	The M.Sc. comprises 90 ECTS; 60 credits in taught modules plus a research project of 30 credits. Part-time students have two options through staged awards: Two year part-time (the preferred part-time route): Full-time P.Grad.Dip. (60 ECTS in Year 1); upgrade to part-time M.Sc. (Master's Project 30 ECTS in Year 2). Three year part-time: Part-time P.Grad.Cert (30 ECTS in Year 1); upgrade to part-time P.Grad.Dip. (additional 30 ECTS in Year 2); upgrade to

	part-time M.Sc. (Master's Project 30 ECTS in Year 3). All MSc students are required to take the following mandatory modules: Research Methods (5 ECTS) Research Project/Dissertation (30 ECTS) MSc students following the Zero Carbon Technology strand are also required to take: Two mandatory 10ECTs Zero Carbon Technology modules Three mandatory 5ECTs modules on solar, wind, and energy policy Four other 5 ECTS modules from the list of optional modules for the Zero Carbon technology strand Some of the module options may be withdrawn from time to time and some new modules may be added, subject to demand.
Assessment and Progression:	Assessments are based on both practical assignments and laboratories as well as written examinations. The written report required for the MSc project is assessed by two readers who agree on a final mark. The pass mark for each module is 50% and the overall mark for the programme is the credit weighted average of the mark awarded for each module. Interim module marks are published at the end of each semester. Final results are determined at a Court of Examiners' meeting with the external examiner present. Module assessments and dissertation are subject to external moderation. To qualify for the award of the MSc degree, students must submit a project report by the prescribed date and achieve a pass mark in the report and pass all the taught modules. To pass the taught modules students must achieve an overall average mark on taught modules of at least 50% and pass taught modules amounting to 60 ECTS credits. In the event a student has failed up to 20 ECTS of taught modules it may be possible to "pass by compensation". To "pass by compensation" a student must (i) achieve an overall credit-weighted average mark of at least 50% AND (ii) achieve a pass mark in taught modules carrying a minimum of 40 ECTS AND (iii) obtain a module mark of at least 40% in any remaining module(s). Students who fail more than 10 ECTS of the taught modules (outright or by compensation) on the first sitting will not be allowed to submit the project report. Hence, they will not be eligible for the award of the MSc but may be eligible for the exit award of the P.Grad.Dip. upon successful completion of 60 ECTS. Students who have failed the taught modules (by virtue of not achieving the overall average mark of 50% and/or not passing taught modules amounting to 60 ECTS credits) may be re-assessed within the academic year with the agreement of the course coordinator. Re-assessment is only available for failed modules totalling not more than 20 ECTS, where at most 15 ECTS of modules were failed in any one semester and none of these modules could have been compensated. Different modalities of assessment are permitted in the reassessment session as determined by the programme. The same compensation regulations apply to reassessed modules as outlined above. 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 will be deemed to have failed the overall course and may apply to repeat the course. **P.Grad.Dip (exit award)** Where a student achieves a pass, either outright or by compensation, in 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 or does not wish to submit a research project for the degree of MSc, she or he may be eligible for the award of a Postgraduate Diploma. The Postgraduate Diploma may be awarded with Distinction to candidates who achieve an overall average mark of at least 70% across the 60 ECTS modules. A Distinction cannot be awarded if a candidate has failed any taught module. Compensated modules are considered to be passed in this case. A student who does not wish to submit a research project for the degree of MSc and opts to be considered for a Postgraduate Diploma must apply to the Course Coordinator in writing before the end of April. **Completion of Zero Carbon Technology strand** To complete the Zero Carbon Technology strand, students must select and successfully complete the 35 ECTS of the mandatory modules and 20 ECTS of the optional 5 ECTS modules for the Zero Carbon Technology strand, along with the mandatory 5 ECTS Research Methods module.
URL Handbook:	TBC
Programme Director:	Assistant Professor John Kennedy

Programme:	**Mechanical Engineering (including the Zero Carbon Technology strand)**
School:	Engineering
Awards and Exit Award:	Attainment award: P.Grad.Dip. Exit award: None
Admission Regulations:	Admission is normally restricted to graduates who have achieved an upper second class honours degree (2.1), or better, in engineering, science, computing, statistics, mathematics or a related discipline. Well-qualified candidates or industry professionals from other numerate disciplines who have sufficient knowledge of engineering and science, may also be considered.
Mode of Delivery & Duration:	One year full-time, or two years part-time. Face-to-face delivery with some blended elements. The programme also includes a strand in Zero Carbon Technology.
Programme Structure:	The P.Grad.Dip. comprises 60 ECTS in taught modules. It does not include a research project. All P.Grad.Dip. students are required to take the mandatory 5 ECTS Research Methods module. Part-time students take the course through staged awards over two years: Part-time P.Grad.Cert (30 ECTS in Year 1); upgrade to part-time P.Grad.Dip. (additional 30 ECTS in Year 2). Students following the Zero Carbon Technology strand are required to take the mandatory 5 ECTS Research Methods module, 2 mandatory 10 ECTs modules for the Zero Carbon strand, 3 mandatory 5 ECTs modules in solar, wind and energy policy and a further four 5 ECTS modules from the list of optional modules for the Zero Carbon strand. Some of the module options may be withdrawn from time to time and some new modules may be added, subject to demand.
Assessment and Progression:	Assessments are based on both practical assignments and laboratories as well as written examinations. The pass mark for each module is 50% and the overall mark for the programme is the credit weighted average of the mark awarded for each module. Interim module marks are published at the end of each semester. Final results are determined at a Court of Examiners' meeting with the external examiner present. Module assessments and dissertation are subject to external moderation. To qualify for the award of the P.Grad.Dip. degree, students must achieve a pass mark in all the taught modules. To pass the taught modules students must achieve an overall average mark on taught modules of at least 50% and pass taught modules amounting to 60 ECTS. In the event a student has failed up to 20 ECTS of taught modules it may be possible to "pass by compensation". To "pass by compensation" a student must (i) achieve an overall credit-weighted average mark of at least 50% AND (ii) achieve a pass mark in taught modules carrying a minimum of 40 ECTS AND (iii) obtain a module mark of at least 40% in any remaining module(s). Students who have failed the taught modules (by virtue of not achieving the overall average mark of 50% and/or not passing taught modules amounting to 60 ECTS credits) may be re-assessed within the academic year with the agreement of the course coordinator. Re-assessment is only available for failed modules totalling not more than 20 ECTS, where at most 15 ECTS of modules were failed in any one semester and none of these modules could have been compensated. Different modalities of assessment are permitted in the reassessment session as determined by the programme. The same compensation regulations apply to reassessed modules as outlined above. Students who do not pass the taught modules will be deemed to have failed the overall course and may apply to repeat the course. **P.Grad.Dip (award)** To qualify for the award of the P.Grad.Dip. degree, 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. 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 which are compensated are considered as passed in this situation. **Completion of Zero Carbon Technology strand** To complete the Zero Carbon Technology strand, students must select and successfully complete the 35 ECTS of the mandatory modules and 20 ECTS of the optional 5 ECTS modules for the Zero Carbon Technology strand, along with the mandatory 5 ECTS Research Methods module.
Programme Director:	Assistant Professor John Kennedy

Programme:	**Mechanical Engineering (including the Zero Carbon Technology strand)**
School:	Engineering
Attainment and Exit Award:	Attainment award: P.Grad.Cert. Exit award: None
Admission Regulations:	Admission is normally restricted to graduates who have achieved an upper second class honours degree (2.1), or better, in engineering, science, computing, statistics, mathematics or a related discipline. Well-qualified candidates or industry professionals from other numerate disciplines who have sufficient knowledge of engineering and science, may also be considered.
Mode of Delivery & Duration:	One year part-time. Face-to-face delivery with some blended elements. The programme also includes a strand in Zero Carbon Technology.
Programme Structure:	The P.Grad.Cert. comprises 30 ECTS in taught modules. It does not include a research project. The course is delivered on a part-time basis over one year. Students may select any combination totalling 30 ECTS from the list of modules. Students following the Zero Carbon Technology strand must select two mandatory 10 ECTS from the Zero Carbon strand and a further 10 ECTS from other optional 5 ECTS modules from the Zero Carbon Technology strand. Some of the module options may be withdrawn from time to time and some new modules may be added, subject to demand.
Assessment and Progression:	Assessments are based on both practical assignments and laboratories as well as written examinations. The pass mark for each module is 50% and the overall mark for the programme is the credit weighted average of the mark awarded for each module. Interim module marks are published at the end of each semester. Final results are determined at a Court of Examiners' meeting with the external examiner present. Module assessments are subject to external moderation. To qualify for the award of the P.Grad.Cert. degree, students must achieve a pass mark in all the taught modules. To pass the taught modules students must achieve an overall average mark on taught modules of at least 50% and pass taught modules amounting to 30 ECTS. In the event a student has failed up to 10 ECTS of taught modules it may be possible to "pass by compensation". To "pass by compensation" a student must (i) achieve an overall credit-weighted average mark of at least 50% AND (ii) achieve a pass mark in taught modules carrying a minimum of 20 ECTS AND (iii) obtain a module mark of at least 40% in any remaining module(s). Students who have failed the taught modules (by virtue of not achieving the overall average mark of 50% and/or not passing taught modules amounting to 30 ECTS credits) may be re-assessed within the academic year with the agreement of the course coordinator. Re-assessment is only available for failed modules totalling not more than 15 ECTS, where at most 10 ECTS of modules were failed in any one semester and none of these modules could have been compensated. Different modalities of assessment are permitted in the reassessment session as determined by the programme. The same compensation regulations apply to reassessed modules as outlined above. Students who do not pass the taught modules will be deemed to have failed the overall course and may apply to repeat the course. **P.Grad.Cert. (award)** To qualify for the award of the P.Grad.Cert. degree, students must pass 30 ECTS of taught modules. Such students may compensate for 10 ECTS (between 40% and 49% only) as long as the overall credit weighted mark across 30 ECTS of taught modules is 50% or over and students have passed outright modules amounting to at least 20 credits. In order to qualify for the award of Postgraduate Certificate 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 Certificate with Distinction cannot be awarded if a candidate has failed any taught module. Modules which are compensated are considered as passed in this situation. **Completion of Zero Carbon Technology strand** To complete the Zero Carbon Technology strand, students must select and successfully complete the two mandatory 10 ECTS modules and 10 ECTS of the other optional 5 ECTS modules from the Zero Carbon Technology strand.
Programme Director:	Assistant Professor John Kennedy

Programme:	**Music and Media Technologies**
School:	Engineering
Award and Exit Award:	M.Phil./P.Grad. Dip
Admission Regulations:	A 2.1 or better Honours Bachelor degree (preferably, but not necessarily) in music, engineering or science. In exceptional cases, applicants to the MMT programme who don't fulfil this requirement but have extensive, relevant professional experience may still be considered. Candidates holding degrees in disciplines other than music should also have suitable music qualifications which will be assessed at an application interview.
Mode of Delivery and Duration:	One year full-time. Two years part-time.
Programme Structure:	The taught modules (5 ECTS each) to be undertaken are structured in two semesters and will amount to 60 ECTS. The modules offered include core and elective subjects. Research Project (30 ECTS): this may be a dissertation, a musical composition or a technological project with a significant research component. Part-time students will select modules for year 1 and year 2 in consultation with the programme director.
Assessment and Progression:	Assessment is by a combination of coursework and written examinations. The pass mark for all elements is 50%. The final mark awarded at the end of the year is based on an average of the mark awarded in each module taken in that year. **Postgraduate Diploma:** In order to qualify for the award of a Postgraduate Diploma, students must achieve an overall average mark of at least 50% in taught modules taken. **Postgraduate Diploma with distinction**: this may be awarded to students who achieve an overall credit-weighted average mark of at least 70% across all modules. **Master Degree:** In order to qualify for the award of a Master degree students must achieve an overall average mark of at least 50% in taught modules taken, and also achieve a mark of at least 50% in the Research Project. Students who fail the research project but who attain a taught module average of 50% will be eligible for award of a Postgraduate Diploma only. **Masters with Distinction**: A distinction may be awarded to students who achieve at least 70% in the Research Project and have an overall module average mark of at least 70%.
URL Handbook:	All information regarding the MMT programme is available via the programme webpage: https://www.tcd.ie/eleceng/mmt/
Programme Director:	Assistant Professor Enda Bates

Programme:	**Project Management**
School:	Engineering
Award and Exit Award:	P. Grad. Dip
Admission Regulations:	The normal entry requirement for this programme is an Honours Bachelor degree in engineering, architecture or quantity surveying plus one year‘s relevant practical experience.
Mode of Delivery and Duration:	One year part-time.
Programme Structure:	The P. Grad. Dip carries 45 ECTS.

Assessment and Progression:	Assessment is by examination and coursework. The pass mark for all elements is 40%. The overall mark for the programme is the credit-weighted average of the mark awarded for each module. To qualify for the award of the Postgraduate Diploma students must pass all elements of the programme amounting to 45 credits and achieve an overall average mark of at least 40%. A student who fails a module or modules may re-sit the relevant module(s) during the supplemental examination session. Failed coursework/project work must be re-submitted by the Friday before the supplemental examinations are held. The Postgraduate Diploma with Distinction may be awarded to students who, in addition, achieve an overall average mark of 70% or above. A Distinction cannot be awarded if a candidate has failed any credit during the programme.
URL Handbook:	The Programme Handbook is available from the Programme Director.
Programme Director:	Assistant Professor Muhammad Ali

Programme:	**Sustainable Energy and Environment**
School:	Engineering
Award and Exit Award:	P. Grad. Dip
Admission Regulations:	The normal minimum entry requirement for this programme is a lower-second class (2.2) award in an Honours Bachelor of Engineering or Science Degrees or another suitable degree.
Mode of Delivery and Duration:	One year part-time.
Programme Structure:	The P. Grad. Dip carries 60 ECTS.
Assessment and Progression:	Assessment is by examination and coursework. The pass mark for all elements is 40%. The marks for the examination in Module 1 and Module 2 (excluding 33% continuous assessment) will constitute 66% of the total assessment of each module. Failed assessments and failed project work may be resubmitted to deadlines contained in the programme handbook. Module 3 is assessed by continuous assessment. The overall mark for the programme is the credit-weighted average of the mark awarded for each module. Students who have passed all three modules of the programme and accumulated 60 credits will be awarded a Postgraduate Diploma in Sustainable Energy. Students who, in addition, have achieved an overall average mark of at least 70% across all three modules passed will be awarded a Postgraduate Diploma in Sustainable Energy with Distinction. The Postgraduate Diploma with Distinction cannot be awarded if a candidate has failed any module, assignment or examination during the period of study.
URL Handbook:	The Programme Handbook is available from the Programme Director.
Programme Director:	Professor Sarah McCormack

Programme:	**High Performance Computing**
School:	Mathematics
Award and Exit Award:	M.Sc./P.Grad.Dip.
Admission Regulations:	A first class or second class (upper division) Honours Bachelor degree in a subject with a significant mathematical component and some knowledge of computing and numerical simulation.
Mode of Delivery and Duration:	One-year full-time.
Programme Structure:	The M.Sc. is a 90 ECTS programme The programme consists of coursework, laboratory work with a supervised project in an application area.
Assessment and Progression:	The pass mark for all elements is 50%. To be awarded the M.Sc., students must achieve a pass in the dissertation, have an overall average mark for the programme of at least 50%, and pass core and optional modules amounting to at least 50 credits and achieve a minimum of 40% in any failed modules. The final mark for the programme is the credit-weighted average of the mark awarded in each module. **Masters with Distinction**: may be awarded to students who pass all modules and achieve at least 70% both in the overall mark for the programme and the dissertation. **Postgraduate Diploma**: if exceptional circumstances have arisen during the year to make it impossible to undertake a project, a student registered for the Masters programme may apply for a Postgraduate Diploma in High Performance Computing. Such students must have an overall average mark of at least 50%, have passed taught modules amounting to at least 50 credits and achieved a minimum mark of 40% in any failed modules. **Postgraduate Diploma with Distinction**: will be awarded to students who have passed outright modules amounting to 60 credits and have achieved an overall average mark of at least 70%.
URL Handbook:	The Programme Handbook is available from the Programme Director.
Programme Director:	Professor Kirk Soodhalter

Programme:	**Quantum Fields, Strings and Gravity**
School:	School of Mathematics
Award and Exit Award:	M.Sc./P.Grad.Dip.(exit)
Admission Regulations:	A second class, upper division Honours Bachelor degree in Mathematics or Physics, or equivalent, is a general requirement for admission except in exceptional circumstances. Transcripts, two reference letters and a personal statement demonstrating an interest in Theoretical or Mathematical Physics are also required. Applicants should clearly state their preference for either the formal or lattice pathway.
Mode of Delivery and Duration:	Face to face; one year full-time.
Programme Structure:	Taught modules -- 60 ECTS Dissertation -- 30 ECTS Two pathways (formal and lattice) with 2 module sequences each (advanced and fundamental) are available.
Assessment and Progression:	Coursework is examined in the December/January and May/June period and by continuous assessment during the two terms (MT and HT). A dissertation describing the project work should be completed by the end of August for examination in September. The pass mark for all elements is 50%. To be awarded the M.Sc., students must achieve a pass in the dissertation, have an overall average mark for the course of at least 50%, and pass core and optional modules amounting to at least 50 credits and achieve a minimum of 40% in any failed modules. The final mark for the course is the credit- weighted average of the mark awarded in each module. The M.Sc. with Distinction may be awarded to students who pass all modules and achieve at least 70% both in the overall mark for the course and in the dissertation if they have not repeated any examinations that form part of their module results. If exceptional circumstances have arisen during the year to make it impossible to undertake a project, a student registered for the Masters course may apply for a Postgraduate Diploma in Quantum Fields, Strings and Gravity. Such students must have an overall average mark of at least 50%, have passed taught modules amounting to at least 50 credits and achieved a minimum mark of 40% in any failed modules. The Postgraduate Diploma with Distinction may be awarded to students who have passed outright modules amounting to 60 credits and have achieved an overall average mark of at least 70% if they have not repeated any examinations that form part of their module results.
URL Handbook:	
Programme Director:	Professor Marius de Leeuw

Programme:	**Biodiversity and Conservation**
School:	Natural Sciences
Award and Exit Award:	M.Sc./P.Grad.Dip.
Admission Regulations:	An upper-second class or higher Honours Bachelor degree (or equivalent) in a science subject that included significant components of botany, zoology or a relevant life or environmental science, together with some relevant experience in the subject area. Candidates with primary degrees in other areas, but with significant relevant experience may also be accepted.
Mode of Delivery and Duration:	One year full-time.
Programme Structure:	The programme carries 90 ECTS and consists of 11 compulsory modules (60 ECTS) and a dissertation of 30 ECTS.
Assessment and Progression:	To pass the taught component of the programme and proceed to the research project and dissertation, the candidate must first pass, outright or by compensation, all taught modules. The pass mark for all assessment components is 50%. In the calculation of the overall average mark for the taught component and the programme as a whole, modules, including the dissertation, are weighted according to their ECTS credit weighting. A student may be permitted to undertake supplemental assessment or examination in a maximum of one module at the discretion of the Court of Examiners. If successful, the mark for the given module will be recorded as 50%. A student may fail one module and pass the taught component of the programme by compensation providing that they have passed outright modules amounting to at least 50 credits, have an overall average mark of at least 50% across all taught modules and a mark of at least 40% in the failed module(s); the Project Planning module cannot be passed by compensation. A candidate who fails to pass modules amounting to 10 or more credits will be required to withdraw from the programme without proceeding to the research project and dissertation module. A student who passes the taught component of the programme but fails the Project Planning module will be required to submit a revised research project proposal prior to being permitted to commence the individual research project leading to a dissertation. **Postgraduate Diploma**: students may graduate with a Postgraduate Diploma if they choose not to take the research project. Students may also be awarded the Postgraduate Diploma if the research project proposal is unsatisfactory. In both cases students must obtain an overall mark of at least 50%, pass modules amounting to at least 50 credits and have a mark of at least 40% in the failed module(s). **Master Degree with Distinction:** To obtain a Master's degree with Distinction, a candidate must: (i) achieve a credit-weighted average mark of at least 70% for all taught modules 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 for the taught modules (30 credits) each have a mark of at least 70%. A Distinction cannot be awarded if a candidate has failed any credit during the period of study.
URL Handbook:	BioCon23-24.pdf (tcd.ie)
Programme Director:	Dr Nick Payne

Programme:	**Development Practice**
School:	Natural Sciences
Award and Exit Award:	M.Sc./P.Grad.Dip.(exit)
Admission Regulations:	A second class, upper division Honours Bachelor degree or grade point average of 3.5 or equivalent is a general requirement for admission. In exceptional cases applicants with a lower grade in their primary degree will be considered if they have demonstrated outstanding achievement in their practical work in the field of international development through their work for government or inter or non-governmental organizations.
Mode of Delivery and Duration:	One year full-time and two years part-time
Programme Structure:	The course consists of 90 ECTS. Students take core modules in four key disciplinary pillars. Students engage in a placement and dissertation module - 30 ECTS are allocated to this module (Dissertation of max. 10,000 words).
Assessment and Progression:	The Pass mark for a module is 50% of the total marks available for the module. Pass by compensation is not permitted for any module. To qualify for the award of the M.Sc. degree, students must pass outright taught modules amounting to 60 credits and achieve a pass in the dissertation module amounting to 30 credits. Students who have passed taught modules amount to at least 60 credits but who do not achieve a pass mark in the dissertation will be deemed to have failed the Masters course and can be considered for an award of the Postgraduate Diploma. Students are entitled to one supplemental examination and/or can re-submit failed assignments in any failed module, except the Dissertation. **Postgraduate Diploma**: an exit award of Postgraduate Diploma in Development Practice will be considered where a student has passed 60 taught credits but has not completed or failed the dissertation module. **Masters with Distinction**: students must achieve a grade of distinction for the research dissertation and obtain an overall credit-weighted average mark for the programme of 70% or above. A Distinction cannot be awarded if a candidate has failed any credit during the period of study.
URL Handbook:	https://naturalscience.tcd.ie/assets/pdf/MDP%20Handbook
Programme Director:	Professor Pádraig Carmody

Programme:	**Environmental Science**
School:	Natural Sciences
Award and Exit Award:	M.Sc./P.Grad.Dip.
Admission Regulations:	An upper-second class or higher Honours Bachelor degree (or equivalent) in a science subject, together with some relevant experience in the subject area. Candidates with primary degrees in other areas, but with significant relevant experience may also be accepted.
Mode of Delivery and Duration:	One year full-time.
Programme Structure:	The programme carries 90 ECTS and includes a taught component (60 credits) and an individual research dissertation (30 credits).
Assessment and Progression:	The pass mark for all assessment components is 50%. In the calculation of the overall average mark for the taught component and the programme as a whole, modules, including the dissertation, are weighted according to their ECTS credit weighting. A student may be permitted to undertake supplemental assessment or examination in a maximum of one module at the discretion of the Court Director and the mark for the given module will be recorded as 50%. A student may fail one module and pass the taught component of the programme by compensation providing that they have passed modules amounting to at least 50 credits, have an overall average mark of at least 50% across all taught modules and a mark of at least 40% in the failed module. A candidate who fails to pass modules amounting to 10 credits or more will be required to withdraw from the programme. To proceed to the individual research project component of the programme, the candidate must satisfy the examiners by: (i) achieving a pass (50% or above) in the project planning module, and (ii) passing the taught modules of the programme, outright or by compensation. A student who passes the taught component of the programme but fails the project planning module will be required to submit a revised research project proposal prior to being permitted to commence the individual research project leading to a dissertation. **Postgraduate Diploma**: Students may graduate with a Postgraduate Diploma if the research project proposal is unsatisfactory, provided that they have an overall mark of at least 50%, have passed modules amounting to at least 50 credits and have a mark of at least 40% in the failed module(s). **Masters Degree with Distinction**: To obtain a Masters degree with distinction, a candidate must: (i) achieve a final credit weighted average mark of at least 70% for all taught modules 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 for the taught modules (normally 30 credits) each have a mark of at least 70%. A Distinction cannot be awarded if a candidate has failed any credit during the period of study.
URL Handbook:	https://www.naturalscience.tcd.ie/assets/pdf/Environmental%20Science%20MSc%20Course%20Handbook%202023-2024.pdf
Programme Director	Professor Juan Diego Rodriguez Blanco

Programme:	**MSc in Smart and Sustainable Cities**
School:	School of Natural Sciences
Award and Exit Award:	M.Sc./P.Grad.Dip.
Admission Regulations:	Admission to the course is competitive. Applicants will be expected to have an Honours Bachelor degree at 2.1 or above in a Social Science or Science-based course such as Engineering, Sociology, Computer Science, Economics, Geography or cognate fields. In case of heavy competition for places or concerns regarding a particular applicant's suitability, applicants may be interviewed or asked to submit a written sample for assessment.
Mode of Delivery and Duration:	One year full-time; face-to-face
Programme Structure:	The course incorporates both taught and practical components. Students undertake a significant independent research project based on original research or reflecting experiential learning that is presented in the form of a dissertation. The course comprises 90 credits consisting of 60 credits of taught modules, and 30 credits of dissertation work.
Assessment and Progression:	The final 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-compensatable, 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. 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 Field Trip Modules are non-compensatable. 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. In order to qualify for the award of Masters with Distinction students must have not failed any component during the period of study and must as a minimum achieve a final overall average mark for the course of at least 70% and a mark of at least 70% in the dissertation or research element. In order to qualify for the award of Postgraduate Diploma with Distinction students must not have failed any component during the period of study and must as a minimum achieve an overall credit-weighted average mark of at least 70% across all modules. 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. There is no compensation between modules. Students are entitled to supplement any failed module, except the dissertation which cannot be repeated, once.
URL Handbook:	TBC
Programme Director	Dr Philip Lawton

Programme:	**Master of Science in Global Challenges for Sustainability**
School:	School of Natural Sciences
Award and Exit Award:	Master of Science in Global Challenges for Sustainability There is no facility for a Postgraduate Diploma exit for this programme.
Admission Regulations:	The admissions process is managed by the University of Barcelona. Admission to the course is selective. There is a maximum capacity. The candidates will be ranked on a scale of 100 points. **General requirements:** • At Bachelor's degree or degree recognised as equivalent to a Bachelor's degree in the relevant national educational system (EQF level 6 or higher) and which is recognised as a sufficient qualification for admissions to a Master's degree.. An English language certification validating C1 or higher (CEFR). Candidates presenting a certificate validating a level B2 will be considered in conjunction with other admission criteria but must validate level C1 before programme registration.i The Joint Virtual Admistrative Office checks the requirements against the documents submitted by the applicant. The applicants are scored according to the following criteria. An evaluation rubric is used to support objectivity. The criteria include four categories: **Academic Excellence (10 points)** Points for academic excellence are based on **on the final grade mark (GPA) of the transcript. The 10 points are distributed as follows:** **Grade – Points** **A - 10 points** **B - 8 points** **C - 4 points** **D - 0 points** **General Academic Competencies (40 points)** • Critical thinking • Analytical writing • Knowledge of SDGs • Personal reflection This will be assessed through a product (eg. essay, poster, video, booklet, pamphlet, podcast, mind-map) on a specific and local challenge related to sustainability. Candidates can be assessed by at least two assessors appointed by the Programme Board. **Personal Competencies (40 points)** • Intercultural competence • Oral communication • Civic engagement • Commitment to the programme Candidates will be assessed on their curriculum vitae andprevious academic experience, as well as a video or audio recording produced by the candidates anwering 5-6 predetermined questions and, if needed, by a personal interview. Candidates can be assessed by at least two assessors appointed by the Programme Board. **Inclusion (10 points)** In order to ensure access and inclusion, students of under-represented communities can obtain 10 points. The prospective students are given the opportunity to self-disclose about their circumstances to the diversity, Equity and Inclusion (DEI) team. As the programme needs to be as diverse and multidisciplinary as possible as part of the learning environment and PLO's, students will be classified according to their discipline and geographical European area by an algorithm created specifically to ensure diversity that is explained in the rules and regulations document. Countries outside Europe will be considered as one area. The admission list is approved by the Programme Board.
Mode of Delivery and Duration:	2 years full-time Face to face Programme is on-campus. The campus are connected by the hybrid classrooms.
Course Structure:	Delivered full-time over 24 months the 120 EC Master's is comprised of • 30 EC Preparatory Phase modules (3 x 10 EC) on Sustainability, Social Innovation and Transdisciplinary Research; • 30 EC Flexible Phase transdisciplinary modules (3 x 10 EC) which are selected from a pool of 12 modules within tracks related to Water, Food, Life and Health, or Energy and Sustainable Cities; • 30 EC Experiential Phase (5 + 5 + 20 EC) including an internship,

	• 30 EC Capstone on a sustainability challenge in collaboration with extra academic actors (i.e. business, community and society). Students must complete a total of 10 modules.
Assessment and Progression:	To qualify for the Masters in Science in Global Challenges for Sustainability award, students must, as a minimum: - Achieve an overall pass mark in each phase which signifies that they have met the expected level of that phase, and - Have successfully completed the compulsory mobility. A numerical grade is not assigned to individual modules in a phase. Individual modules are assessed using levels, i.e.,pre-novice, novice, intermediate, advanced, and expert. A numerical grade is assigned to the overall phase only, where the Portfolio Assessment Committee reviews student progress at the end of the phase and assigns a numerical grade reflective of the average level attained by the student. The pass mark for each phase is 50%. Students are assessed via continuous assessment only. There are no written exams. Assessment approaches include group and individual project work. The approach to assessment is fully described in Articles 1.1-1.9 of the Academic Rules and Regulations. Remediation is offered to students who score between 35-49% at the end of a phase. The period of remediation is informed by the development of a remediation plan tailored to the student and agreed with the Chair of the Portfolio Assessment Committee. The grade assigned to the work completed during the remediation period cannot be any higher than the 'expected grade' for the phase. A student cannot receive a grade for a subsequent phase until the phase preceding it has received a pass grade. If a student fails a remediation plan, including failure to engage with a remediation plan, they will be deemed to have failed the programme, and will be required to withdraw from the programme. A student who has failed a remediation plan may apply once to the Board of Examiners for permission to re-sit the failed phase(s). Students who receive a grade lower than 35% in a phase will be deemed to have failed the phase and will not be permitted to remediate. The student can apply to the Board of Examiners for permission to re-do the failed phase. This option can only be availed of once in the whole programme. The rules and regulations on progression are fully described in Articles 2.1-2.6 of the Academic Rules and Regulations.
URL Handbook:	TBC
Programme Director	Dr Annemarie Bennett

Programme:	**Energy Science**
School:	Physics
Award and Exit Award:	M.Sc./P.Grad.Dip.
Admission Regulations:	A second class Honours degree or the international equivalent in either a physical science, earth science or engineering subject. Applications from similarly qualified candidates from other disciplines are welcome if they can demonstrate a sufficient level of knowledge or interest in the energy sector.
Mode of Delivery and Duration:	One-year full-time
Programme Structure:	Taught component valued at 60 ECTS (six 10 ECTS modules) and a 30 ECTS research project. Typically, part-time students will take 50 ECTS in year 1 and 40 ECTS in year 2.
Assessment and Progression:	The pass mark for all modules is 50%. Module I carries an assessment model of 70%/30% between examinations/programme work. Modules II-VI also use laboratory work and carry an assessment model of 60%/40% across lectures/programme work. The research project and dissertation uses an assessment model of 80/20% between dissertation and continuous assessment. The overall degree mark is calculated in proportion to the ECTS credits attributed to each module. A student who fails to achieve a mark of 50% in Module I-III will be permitted to be re-assessed the Hilary Term examination period. **Postgraduate Diploma**: a student who fails modules taken in the Hilary Term examination period and who achieves a mark of 40% overall in the module examinations and continuous assessment, will be considered for an award of Postgraduate Diploma in Energy Science. He or she will not be permitted to complete the research project. **Masters with Distinction**: may be awarded if the student achieves an overall mark of at least 70% and the mark for the research project is also at least 70%.
URL Handbook:	https://www.tcd.ie/programmes/energyscience
Programme Director:	Professor David McCloskey

Programme:	**MSc in Quantum Science and Technology**
School:	Physics
Award/exit award:	MSc/ Postgraduate Diploma in Quantum Science and Technology
Admission Regulations:	Admission to the course is competitive. Applicants will be expected to have an Honours Bachelor degree at 2.1 or above in a physics, mathematics, computer science or engineering degree (or equivalent, if the student is coming from a country operating a different grading system). Applicants with lower than a 2.1 will be considered on a case by case basis by the Dean of Graduate Studies. In case of heavy competition for places or concerns regarding a particular applicant's suitability, applicants may be interviewed online.
Mode of Delivery and Duration:	1 year full-time Blended
Course Structure:	This course will consist of six 10 ECTS modules and one 30 ECTS project (an industrial internship, or university-based academic research).
Assessment and Progression:	The final 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 the academic year of their course by satisfactory completion of all course requirements. To qualify for the postgraduate Masters 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 project element. 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. Final results are determined at the final Court of Examiners' meeting at the end of the academic year with the external examiner's input. 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 on a Masters course 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. In order to qualify for the award of Masters with Distinction students must have not failed any assessment component during the period of study and must as a minimum achieve a final overall average mark for the course of at least 70% and a mark of at least 70% in the dissertation or research element. In order to qualify for the award of Postgraduate Diploma with Distinction students must not have failed any assessment component during the period of study and must as a minimum either achieve an overall credit-weighted average mark of at least 70% across all modules. 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. Additional requirements for this course (i.e. Supplemental re- assessment/examinations; compensatable/non-compensatable modules etc) Supplemental re-assessment/examinations: There are no written examinations. Students will get a chance to redo continuous assessment elements of each module, not necessarily in the same format.
URL Handbook:	https://www.tcd.ie/physics/quantumtech/structure/
Course Director:	Professor Felix Binder