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Introduction
Welcome to the MSc in Engineering (Environmental/Structural & Geotechnical/Sustainable Energy/Transport Engineering Policy and Planning) at the Department of Civil, Structural and Environmental Engineering, Trinity College Dublin. This course aims to develop Engineers with specialist understanding in one of: Environmental Engineering; Structural & Geotechnical Engineering; Transport Engineering; or Sustainable Energy Engineering. In addition, the course offers students the opportunity to obtain knowledge in complimentary subject areas within Civil Engineering.

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

Key Dates: 2017-2018
Teaching Terms

First Semester
Monday 25 September 2017 – Friday 15 December 2017
Study Week: 6 – 10 November 2017 (week 7 of the semester)

Second Semester
Monday 15 January 2018 – Friday 7 April 2018
Study Week: 26 February – 2 March 2018 (week 7 of the semester)

Project Submission Dates:

CE7M02
- Literature Review – Wednesday, 31st January 2018 [Semester 2, Wk 3]
- Research Proposal Report – Friday, 10th November 2017 [Semester 1, Wk 7]
- Research Proposal Presentation – Monday, 6th November 2017 [Semester 1, Wk 7]
- Ethics Essay - Friday, 2nd March 2018 [Semester 2, Wk 7]
- Research paper – Thursday, 16th August 2018 [Calendar Wk 51]
- Data Analysis – Tuesday, 19th December 2017[Semester 1, Wk 13]
- Lunchtime Lectures – Thursday, 26th April 2018 [Calendar Wk 36]
- GIS – Tuesday, 6th February 2018 [Semester 2, Wk 4]

CE7M03
- Interim report submission – Monday, 11th December 2017 [Semester 1, Wk 12]
- Interim Poster Presentation – Monday, 26th February 2018 [Semester 2, Wk 7]
- Final Dissertation Submission – Monday, 13th August 2018 [Wk, 51]
- Final Presentation – date to be advised – September 2018.
Course Calendar

The course is divided into two semesters as follows:

<table>
<thead>
<tr>
<th>Calendar week</th>
<th>Week commencing</th>
<th>Outline Structure of Academic Year</th>
<th>Notes</th>
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<tbody>
<tr>
<td>3</td>
<td>11-Sep-17</td>
<td>PG Registration</td>
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<td>4</td>
<td>18-Sep-17</td>
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<tr>
<td>5</td>
<td>25-Sep-17</td>
<td>Teaching Week 1</td>
<td>Semester one begins</td>
</tr>
<tr>
<td>6</td>
<td>02-Oct-17</td>
<td>Teaching Week 2</td>
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<td>7</td>
<td>09-Oct-17</td>
<td>Teaching Week 3</td>
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<td>8</td>
<td>16-Oct-17</td>
<td>Teaching Week 4</td>
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<td>9</td>
<td>23-Oct-17</td>
<td>Teaching Week 5</td>
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<tr>
<td>10</td>
<td>30-Oct-17</td>
<td>Teaching Week 6 (Monday, Public Holiday)</td>
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<tr>
<td>11</td>
<td>06-Nov-17</td>
<td>Teaching Week 7 - Study Week</td>
<td>Project/Assignment Week - Engineering</td>
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<td>12</td>
<td>13-Nov-17</td>
<td>Teaching Week 8</td>
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<tr>
<td>13</td>
<td>20-Nov-17</td>
<td>Teaching Week 9</td>
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<td>14</td>
<td>27-Nov-17</td>
<td>Teaching Week 10</td>
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<tr>
<td>15</td>
<td>04-Dec-17</td>
<td>Dissertation Week 1</td>
<td>Interim Project Report</td>
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<tr>
<td>16</td>
<td>11-Dec-17</td>
<td>Dissertation Week 2</td>
<td>Semester 1 ends in Week 12</td>
</tr>
<tr>
<td>17</td>
<td>18-Dec-17</td>
<td>Christmas Period (College closed 22 December 2017 to 1 January 2018, inclusive)</td>
<td>Christmas vacation period between teaching terms 4 weeks (as at present)</td>
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<tr>
<td>18</td>
<td>25-Dec-17</td>
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<td>19</td>
<td>01-Jan-1B</td>
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<td>20</td>
<td>08-Jan-1B</td>
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<tr>
<td>21</td>
<td>15-Jan-1B</td>
<td>Teaching Week 1</td>
<td>Semester two begins</td>
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<td>22</td>
<td>22-Jan-1B</td>
<td>Teaching Week 2</td>
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<td>23</td>
<td>29-Jan-1B</td>
<td>Teaching Week 3</td>
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<td>24</td>
<td>05-Feb-1B</td>
<td>Teaching Week 4</td>
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<td>25</td>
<td>12-Feb-1B</td>
<td>Teaching Week 5</td>
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<td>26</td>
<td>19-Feb-1B</td>
<td>Teaching Week 6</td>
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<td>27</td>
<td>26-Feb-1B</td>
<td>Teaching Week 7 - Study Week</td>
<td>Project/Assignment Week - Engineering</td>
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<tr>
<td>28</td>
<td>05-Mar-1B</td>
<td>Teaching Week 8</td>
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<td>29</td>
<td>12-Mar-1B</td>
<td>Teaching Week 9</td>
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<td>19-Mar-1B</td>
<td>Teaching Week 10 (Monday, Public Holiday)</td>
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<td>31</td>
<td>26-Mar-1B</td>
<td>Dissertation Week 3 (Friday, Good Friday)</td>
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<td>32</td>
<td>02-Apr-1B</td>
<td>Dissertation Week 4 (Monday, Easter Monday)</td>
<td>Interim Project Presentation</td>
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<tr>
<td>33</td>
<td>09-Apr-1B</td>
<td>Dissertation Week 5 Trinity Week (Monday, Trinity Monday)</td>
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Teaching in the first semester begins on Monday 25th September 2017. The following regulations apply to students commencing the MSc program during 2017/2018 academic year. (Note that in the case of part-time students continuing into their second year, the regulations in the 2016/17 MSc handbook continue to apply).

Course Structure
Candidates must take eleven modules, namely the three mandatory modules, (M1, M2 and M3) together with at least four of the modules in their chosen specialisation and four other modules, which in total amounts to 90 ECTS.

In the first semester, candidates pursuing the course full time must take modules M1 and M2 along with four other modules selected from the options (including at least two from their selected specialisation), listed below. In the second semester, candidates pursuing the course full time must take module M3 along with four other modules selected from the options (including at least 2 from their selected specialisation), also listed below:

**Mandatory**
M1. Civil Engineering Management (10 ECTS)
M2. Research Methodology (10 ECTS)
M3. (Environmental / Structural / Transport) Engineering Dissertation (30 ECTS)

**Environmental Engineering**
E1. Hydrological Processes & Hydrometry (5 ECTS)
E3. Air Pollution (5 ECTS)
E4. Waste Management & Energy Recovery (5 ECTS)
E5. Water Quality and Hydrological Modelling (5 ECTS)
E6. Water Resource Planning & Climate Change (5 ECTS)
E7. Sustainable Water Supply & Sanitation (5 ECTS)
E9. Introduction to Environmental Engineering (5 ECTS)

**Structural & Geotechnical Engineering**
S1. Geotechnical Engineering (5 ECTS)
S2. Advanced Structural Analysis (5 ECTS)
S3. Wind and Earthquake Engineering (5 ECTS)
S4. Bridge Engineering (5 ECTS)
S5. Advanced Concrete Technology (5 ECTS)
S6. Soil-Structure Interaction (5 ECTS)
S7. A Unified Theory of Structures (5 ECTS)  
S8. Concrete Durability & Sustainability (5 ECTS)  
S9. Advanced Theory of Structures (5 ECTS)  

Sustainable Energy  
J1. Wind Energy (5 ECTS)  
J2. Solar Energy Conversion & Applications (5 ECTS)  
J4. Energy Policy & Demand (5 ECTS)  
J6. Wave & Hydro Energy (5 ECTS)  

Transport Engineering, Policy and Planning  
T1. Transportation Engineering (5 ECTS)  
T2. Transport Modelling & Planning (5 ECTS)  
T4. Transportation Data & Evaluation (5 ECTS)  
T5. Transport Design (5 ECTS)  

Common  
C4. Facade Engineering (5 ECTS)  
C5. Advanced Spatial Analysis Using GIS (5 ECTS)  

Some of the module options in either semester may be withdrawn from time to time and some new modules may be added, subject to demand. In the event that insufficient module options are available to meet the minimum module requirements of a particular specialisation then an alternative specialisation or a general Civil Engineering specialisation may be chosen.  

Candidates may also take the course part-time over two years. In this case, during the first year, the candidates take seven modules, namely: the mandatory modules M1 and M2 along with five of the module options (including at least two from their chosen specialisation) which amounts to 45 ECTS. During the second year, candidates must complete the compulsory M3 module together with three other module options (including at least two from their chosen specialisation) which amounts to another 45 ECTS. By the end of the course, part-time candidates must have completed at least four of their specialisation module options and four of the other module options, amounting to a total of 90 ECTS credits.  

Please note that each semester will include a reading week during which there will be no scheduled lectures and the students will be required to carry out coursework and independent study. Hence, modules are scheduled over a ten-week period although lectures will only be scheduled over nine of these weeks.
Selection of Modules
An important decision that you will have to make early in the program is which optional modules you are going to take examinations in. **You must confirm which module options you are taking in both the first and second semesters by email or submitting the module choice form to by Tuesday 3rd October 2017, at the latest to civeng@tcd.ie.** You will not have access to modules on blackboard or in your student portal until you have registered your selection as instructed here.

Teaching Methods
A wide range of teaching methods are employed on the program. The teaching method reflects the teaching objectives and includes formal lectures, seminars, group design projects and site visits. Students are encouraged to ask questions during or after lectures or seminars if points require clarification, or if their own experience provides useful insight into the subject in hand.

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

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

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

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

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

5. **Working with colleagues**
   Working with a few colleagues in a group will often help everyone to learn effectively. For example, it may be necessary to set time aside each day to review lecture notes together. Working together may help with your personal discipline, while discussing a subject often clarifies many of the issues and concepts involved. However, it should be pointed out that working together is not the same as copying another person’s work.
Assessment

Students will be examined in the compulsory and optional modules and the dissertations will also be assessed. Coursework will form a significant part of certain modules, particularly M2 Dissertation Phase 1 which is based on continuous assessment only. A Board of Examiners oversees the assessment of students. The Board of Examiners is made up of the academic staff and the independent External Examiner. The External Examiner is an eminent academic staff member from another University, currently Prof. Susan Taylor from Queens University Belfast. The function of the External Examiner is to overlook the assessment procedures and to moderate the marking of examinations, coursework and projects by the members of the academic staff.

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

The pass mark for all elements is 50%. The overall mark for the course is the credited weighted average of the mark awarded in each module. To qualify for the award of the MSc degree, students must achieve an overall average mark of at least 50%, achieve a pass mark in M3 Dissertation module and either i) pass taught modules amounting to 60 ECTS or ii) pass taught modules amounting to at least 50 and have a mark of not less than 40% in the failed modules. Those students who achieve an overall average mark 70% or above both for the course and in M3 Dissertation Phase 2 will be awarded a distinction. A distinction cannot be awarded if a candidate has failed any credit during the course.

Assessment methods used include:

- Dissertation
- Formal Examination
- Oral Presentations of Individual Projects

Formal Examinations

Examinations will be held during the annual examination period following the second semester. They consist of unseen written questions of a variety of types including short questions, mathematical problems and essays. They serve to test factual knowledge and the development of theoretical understanding of the subjects. All annual examinations will be three hours in duration, unless stated otherwise.

Formal examination questions are based on the content of the taught courses. The best guarantee of success therefore is to work steadily throughout the course, reviewing the contents of each lecture using both your notes and standard texts. Past papers are available to download through the Exam Papers link on the TCD homepage.

Dissertation

The dissertation is carried out in two phases. The first phase M2 Dissertation Phase 1 comprises a literature review, preliminary studies and significant coursework component. M2 lectures will take place during the first and second semesters and the schedule of lectures will be confirmed
by the module coordinator in due course. The second phase, M3 Dissertation Phase 2, which runs from week 3 in semester one until the end of September, includes a significant research component.

Note that the MSc dissertation is a major undertaking requiring maturity, planning, analysis and a considerable amount of hard work. Two soft-bound copies must be handed in no later than Monday, 13th August 2018. Two hardbound copies of the dissertation, including corrections where necessary, must be submitted by the end of September 2018. Recommendations for the format and presentation of dissertations are given in an appendix.

The marks for the dissertation (85%) are awarded on the following basis:

1. Presentation = 25%.
2. Amount of own work done = 25%.
3. Understanding and difficulty = 25%.
4. Conclusions = 25%.

Also important are the initiative and commitment shown by the student and two presentations. It is mandatory that students make a presentation of the project to their class and the Civil Engineering Staff, normally June, and also to the External Examiner in September. The dates, schedule and format of presentations will be issued closer to the date.

5% of the M3 marks will be awarded based on the interim report in December and an additional 10% will be awarded based on an interim project presentation due at the end of Semester 2.

Failure and Reassessment
The Board of Examiners meet twice during the academic year; once in June following the annual examinations, and again during September. Students do not automatically have the right to repeat examinations. It is solely at the discretion of the Board of Examiners that students be permitted to repeat examinations. There is one sitting of the annual examinations for each module offered during the academic year. There are no special examinations after the annual examinations. Students who miss examinations due to an explained absence, and on permission of the Board of Examiners, may take the examination during the annual examination period the following academic year.

Note that students who complete the examination requirements and Dissertation Phase 1 only, may on the recommendation of the Board of Examiners be awarded a Postgraduate Diploma in Engineering (60 ECTS credits).

Prizes
The student who achieves the highest overall mark based on the annual MSc in Engineering examinations is awarded the Robert Friel Prize, valued at €200. The student who achieves the highest overall mark based on their dissertation is awarded the best project prize, valued at €200.
Attendance Requirements
You must attend all lectures, site visits and examinations for your chosen modules in the MSc in Engineering. You must inform the lecturer and the course co-ordinator as soon as possible of any absences. All the academic staff are very sympathetic to students who have genuine reasons for missing a period of studies or an examination. Compensation for missed or late assessments (including examinations) however, will only be possible if accompanied by a Medical Certificate or other compelling evidence.

Plagiarism
The College’s policy on plagiarism is outlined in the general regulations and information (Part II of the Calendar). In the Calendar Part 2 for 2017-18 the entry for plagiarism is at paragraph 82. A general set of guidelines for students on avoiding plagiarism is available on http://tcd-ie.libguides.com/plagiarism. This site also provides a matrix of the levels of plagiarism together with the consequences, if they are found to have committed plagiarism. Further, it contains the online tutorial ‘Ready, Steady, Write’ which must be completed by all students: students should be made aware of this and their attention drawn to the declaration which they must complete when submitting work for assessment.

There is no substitute to reading the regulations but here are a few of the key points. Plagiarism arises from:

- copying another student’s work
- enlisting another person or persons to complete an assignment on the student’s behalf
- quoting directly, without acknowledgement, from books, articles or other sources, either in printed, recorded or electronic format
- paraphrasing, without acknowledgement, the writings of other authors

Plagiarism is serious whether the plagiarism is deliberate or has arisen through carelessness. Be careful when you are writing your coursework and dissertation to make sure that you reference your work properly, giving credit to the sources you have used. At the discretion of individual lecturers, assignment may be checked for plagiarism using systematically using Turn-it-in or similar software systems. Please note that any assignments, projects or continuous assessment submitted by students for assessment may be checked for plagiarism through the internet or through software packages, such as Turnitin.

European Credit Transfer System (ECTS)
The ECTS is an academic credit transfer and accumulation system representing the student workload required to achieve the specified objectives of a study programme.

The ECTS weighting for a module is a measure of the student input or workload required for that module, based on factors such as the number of contact hours, the number and length of written or verbally presented assessment exercises, class preparation and private study time, laboratory classes, examinations, clinical attendance, professional training placements, and so on as appropriate. There is no intrinsic relationship between the credit volume of a module and its level of difficulty.
In College, 1 ECTS unit is defined as 20-25 hours of student input so a 5-credit module will be designed to require 100-125 hours of student input including class contact time and assessments. ECTS credits are awarded to a student only upon successful completion of the course year.

**Keys**

Keys to the front doors of the Simon Perry Building can be obtained from Dr. Kevin Ryan, Chief Technician, ryank8@tcd.ie, for a returnable deposit.

**Safety Procedures**

If any safety queries or complaints arise, they should be brought to the attention of the Department Safety Officer (Dr. Dermot O’Dwyer, dwodwyer@tcd.ie, Museum Building) or another member of the technical staff. All students working in the laboratories must be made aware of the safety procedures of the laboratory and must wear appropriate footwear. Students working on-site must wear appropriate footwear and hard hats.

**Student Opinion and Feedback**

**Module Questionnaires**

The Department usually evaluates individual modules at the end of each lecture series. The information received is used to improve module provision on subsequent years.

**Class Representative**

A class representative is elected by the class in September of each year and will act as a liaison between staff and the MSc class.

**Action on Feedback**

Where possible and necessary, feedback will be acted on immediately.

**The Academic Year**

The academic year is divided into two semesters.

**First semester:** Monday 25th September 2017 to Friday 15th December 2017.

**Second semester:** Monday 15th January 2018 to Friday 6th April 2018.

The Dissertation Phase 2 will be undertaken full time from week 40 until the end of August. The Dissertation must be handed in by 13th August 2018, and there will be mandatory oral presentations to the external examiner at the end of September.
Computing Facilities
Students have access to College computing facilities. In addition, the computer laboratory in the Old Civil Engineering Building (Red Brick Building) may be used by MSc students when not in use by other scheduled classes.
Careers Advisory Service
Postgraduate study opens the doors to many opportunities but the market is competitive and you will need to differentiate yourself clearly from other candidates.

Resources:
The Careers Advisory Service (CAS) provides a wide range of resources and services to help you make and implement informed choices about your future career direction.

The Careers Information Centre at 7-9 South Leinster Street contains a range of free, career-related booklets and employer materials for you to take away. Online, the resources section of the website (www.tcd.ie/Careers/resources) provides useful information on a range of topics from career choice and planning, to working abroad, taking a year out and everything in between.

Services:
Individual appointments to meet a Careers Consultant are also available. They work with you to identify how best to approach the next step in your career. They can also review your CV/LinkedIn profile and provide coaching to ensure maximum impact at interview.

Job opportunities from employers currently recruiting Trinity graduates as well as postgraduate courses and funding are available online.

CAS also offers a wide range of seminars; workshops and employer presentations, including postgrad specific events, throughout the year that will help you explore where your postgraduate study can take you.

MyCareer
An online service that you can use to:

- Apply for opportunities which match your preferences - vacancies including research options
- Search opportunities- postgraduate courses and funding
- View and book onto employer and CAS events
- Submit your career queries to the CAS team
- Book an appointment with your Careers Consultant
Simply login to MyCareer using your Trinity username and password and personalise your profile.

**Careers Advisory Service**

Trinity College Dublin, 7-9 South Leinster Street, Dublin 2

01 896 1705/1721 | Submit a career query through MyCareer

**Opening Hours**

**During term:** 9.30am - 5.00pm, Monday - Friday

**Out of Term:** 9.30am - 12.30pm & 2.15 - 5.00pm, Monday - Friday
Degree Support and Administration

The Course Director, Dr. Liwen Xiao along with the Head of Department, Prof. Brian Broderick, have responsibility for the MSc in Engineering program. The administration of each module is delegated to the Module Coordinators. The Module Coordinators are identified in the relevant Module Outline sheets and should be consulted in relation to module specifics. Planning and review of the program is undertaken in a series of meetings held each summer.

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<tr>
<th>OFFICE SUPPORT</th>
<th>TECHNICAL SUPPORT</th>
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<tbody>
<tr>
<td>Mary Curley</td>
<td>Dr. Kevin Ryan, Chief Technician</td>
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<tr>
<td>Course Administrator</td>
<td>Old Civil Engineering Laboratory</td>
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<tr>
<td>Department Office, Museum Building</td>
<td>email: <a href="mailto:ryank8@tcd.ie">ryank8@tcd.ie</a></td>
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<tr>
<td>email: <a href="mailto:curleyma@tcd.ie">curleyma@tcd.ie</a></td>
<td>Tel: 896 1010</td>
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<tr>
<td>Tel: 8961457</td>
<td>Dr. Gerard Mc Granaghan</td>
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<td>New Civil Engineering Building</td>
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<td>email: <a href="mailto:gmcgrana@tcd.ie">gmcgrana@tcd.ie</a></td>
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<td>Daniel Wearen</td>
<td>Mr. Eoin Dunne</td>
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<td>Senior Executive Officer</td>
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## Academic Staff – 2017/2018

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<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Building/Bibliography</th>
<th>Email Address</th>
<th>Tel</th>
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<tr>
<td><strong>Prof. Brian Broderick</strong></td>
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<tr>
<td><strong>Prof. Ravindra Dhir</strong></td>
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</table>
### Academic Staff – 2017/2018 contd.

<table>
<thead>
<tr>
<th>Name</th>
<th>Building</th>
<th>Email</th>
<th>Tel</th>
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<tbody>
<tr>
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</tr>
</tbody>
</table>
List of Modules and SITS codes for MSc course 2017 – 2018

All MSc in Engineering module descriptors are available on the TCD portal. To access the module descriptors for each of these modules please go to [https://my.tcd.ie/urd/sits.urd/run/siw_lgn](https://my.tcd.ie/urd/sits.urd/run/siw_lgn)

**Mandatory**

M1. SITS Code: CE7M01 - Civil Engineering Management (10 ECTS)
M2. SITS Code: CE7M02 - Research Methodology (10 ECTS)
M3. SITS Code: CE7M03 - (Environmental / Structural & Geotechnical / Transport/Sustainable Energy) Engineering Dissertation (30 ECTS)

**Environmental Engineering**

E1. SITS Code: CE7E01 - Hydrological Processes & Hydrometry (5 ECTS)
E3. SITS Code: CE7E03 - Air Pollution (5 ECTS)
E4. SITS Code: CE7E04 - Waste Management & Energy Recovery (5 ECTS)
E5. SITS Code: CE7E05 - Water Quality and Hydrological Modelling (5 ECTS)
E6. SITS Code: CE7E06 - Water Resource Planning & Climate Change (5 ECTS)
E7. SITS Code: CE7E07 - Sustainable Water Supply & Sanitation (5 ECTS)
E9. SITS Code CE4A31 - Introduction to Environmental Engineering (5 ECTS)

**Structural Engineering**

S1. SITS Code: CE7S01 - Geotechnical Engineering (5 ECTS)
S2. SITS Code: CE7S02 - Advanced Structural Analysis (5 ECTS)
S3. SITS Code: CE7S03 - Structural Dynamics and Earthquake Engineering (5 ECTS)
S4. SITS Code: CE7S04 - Bridge Engineering (5 ECTS)
S5. SITS Code: CE7S05 - Advanced Concrete Technology (5 ECTS)
S6. SITS Code: CE7S06 - Soil-Structure Interaction (5 ECTS)
S7. SITS Code: CE7S07 - A Unified Theory of Structures (5 ECTS)
S8. SITS Code: CE7S08 - Concrete Durability & Sustainability (5 ECTS)
S9. SITS Code: CE7S09- Advanced Theory of Structures (5 ECTS)

**Sustainable Energy**

J1. SITS Code: CE7J01 – Wind Energy (5 ECTS)
J2. SITS Code: CE7J02 – Solar Energy Conversion & Applications (5 ECTS)
J4. SITS Code: CE7J04 – Energy Policy & Demand (5 ECTS)
J6. SITS Code: CE7J06 – Wave & Hydro Energy (5 ECTS)

**Transport Engineering, Policy & Planning**

T1. SITS Code: CE7T1 – Transportation Policy (5 ECTS)
T2. SITS Code: CE7T02 - Transportation Modelling & Planning (5 ECTS)
T4. SITS Code: CE7T04 – Transportation Data & Evaluation (5 ECTS)
T5. SITS Code: CE7T05 – Transport Design (5 ECTS)

**Common**
C4. SITS Code: CE7C04 - Façade Engineering (5 ECTS)
C5. SITS Code: CE7C05 – Advanced Spatial Analysis using GIS (5 ECTS)
APPENDIX 1 - UNDERTAKING THE RESEARCH DISSERTATION

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

In the first semester, a list of possible projects will be compiled by the academic staff and distributed to the MSc class. A presentation of these topics will be made by individual lecturers to the class and students will be requested to choose a project on which to work, having discussed and agreed beforehand with the relevant supervisor. Students are also welcome to suggest their own topics for projects and they may proceed with these projects once a suitable supervisor has been found from the academic staff.

Projects may be laboratory based, computer based or desk based, and may be carried out in Dublin, elsewhere in Ireland or abroad if appropriate.

The work on the project, Dissertation Phase 2, should start from week ten in semester one and run through until the end of August. Students make oral presentations of the project to the class and academic staff in June. The dissertation must be submitted by the 24th August 2018, and evaluation (by oral presentations and possible interviews with the external examiner) will take place towards the end of September. The dates and schedule of presentations/interviews will be issued closer to the date.
APPENDIX 2 - RECOMMENDATIONS FOR THE FORMAT OF RESEARCH
PROJECT THESES

Two soft bound copies of the thesis must be submitted by 13th August 2018. The title of the project should be written on the front outer cover, with the student's name, qualification for which the work is submitted and year of submission. Two hardbound copies must be submitted once the thesis has been passed by the supervisor and Board of Examiners. A thesis which has been examined and in which all necessary corrections have been completed, must be securely bound in hard covers with dark blue colour. The final size when bound must not exceed 320 x 240 mm. All copies must include a statement that the work carried out was the student’s own and has not been submitted as part of a degree in this or any other university.

General Details

Recommended Thesis Layout

The following is a complete list of the various pages and sections that are likely to be needed in any thesis.

- Title page
- Declaration
- Abstract
- Table of Contents
- List of Tables and Figures
- Acknowledgements
- Abbreviations
- Introduction
- Literature Review
- THESIS MAIN BODY
- List of References
- Appendices

These will now be considered in detail:

Title Page

This should contain the following information:

- the full title of the thesis;
- qualification for which the report is submitted;
- month and year of submission.
- author's full name;

Declaration:

The thesis must contain immediately after the title page:

(a) a signed declaration that it has not been submitted as an exercise for a degree at this or any other University,
(b) a signed declaration that it is entirely the candidate's own work (in the case of a thesis for which the work has been carried out jointly, there must be a statement that it includes the unpublished and/or published work of others, duly acknowledged in the text wherever included) and

(c) a signed statement that the candidate agrees that the Library may lend or copy the thesis upon request. This permission covers only single copies made for study purposes, subject to normal conditions of acknowledgment. (See below for stays on the exercise of this permission).

Abstract

This section, which should only be one A4 page long, is intended to give an overview of the whole project. It should contain a description of the work undertaken and of any significant results or conclusions reached. One copy of the abstract, printed on a single sheet of A4 paper, must also be submitted loose with each copy of the thesis. The abstract must contain the title of the thesis and the author's full names as a heading and may be single spaced.

Table of Contents

This is to list all relevant subdivisions of the thesis including the various appendices and should include page numbers.

Acknowledgements

A formal statement of acknowledgments must be included in the thesis.

Introduction

This should provide background information about the topic. The objectives of the project should be stated clearly.

Literature Review

A comprehensive summary of the literature, relevant only to the particular research topic should be given. This should consist mainly of recent specific references to journals, books and conference proceedings. It is not normally necessary to refer to general textbooks. References in the literature review should not be cited unless they have actually been read. Key, early references, to the topic may be included, but avoid the use of very general references. The Literature Review should preferably finish with a brief summary and lead in to the particular research topic.

Thesis Main Body

The layout of this most important part of the thesis will depend on the particular subject matter covered. The layout should be discussed with the relevant supervisor before the thesis is written. There will be usually between 6 and 8 chapters in the thesis (including the introduction and the
literature review). The chapters should be sub-divided with appropriate headings. Numbering of headings and subheading should be as follows: 3., 3.1, and 3.1.1, etc (but not 3.1.1.1, further sub-division should be: 3.1.1, i, ii, a, b, etc.).

Chapters describing the aims and objectives, the results and analysis and a discussion of the results must be included. In addition, the final chapter should outline the conclusions and/or recommendations. Recommendations for future work should also be included in the last chapter. Consistency is very important throughout the thesis, including the way in which lists are made.

List of References

Whenever some use is made of any external material in the thesis, this should be admitted to by referring specifically to the book, journal article, conference proceedings or other source, as:

"...Smith (1995) stated that....” or

“Studies have shown....(Smith, 1995).

When an author has published more than one cited document in the same year letters a,b,c etc. are included after the year in the parentheses. If there are two authors both names are given. If there are more than two authors, the first author and “et al.” is used:

“Smith et al. (1995) stated that....”

If you refer to a source quoted in another work you cite both in the text:

“A study by Smith (1960 cited Jones 1994 p.24) showed that...”

These references are then given in detail under the 'List of References' section. They must be given in ALPHABETICAL ORDER. The method of referencing for Trinity College is the Harvard system.

For a book

Author's SURNAME, INITIALS., (Year of publication) Title. Edition. (if not the first). Place of publication: Publisher.

**For a contribution in a book:**

Contributing authors SURNAME, INITIALS, (Year of publication) Title of contribution, Followed by: *In:* INITIALS, SURNAME of author or editor of publication followed by ed. or eds. if relevant, *Title of book,* Publisher, Page numbers of contribution.


**For a journal article**

Author's SURNAME, INITIALS, (Year of Publication), Title of article, *Name of Journal,* Volume No. (Part), Relevant pages.


**For an article published in conference proceedings**

Author's SURNAME, INITIALS, (Year of Publication), Title of article, *Title of proceedings* including date and location of conference, Relevant pages, Publisher.


**For a publication from a corporate or government body:**

NAME OF ISSUING BODY, (Year of publication) *Title of publication.* Place of publication: Publisher, (Report Number) (where relevant).


**For a thesis:**

AUTHOR’S SURNAME, INITIALS, (Year of publication) *Title of thesis.* .Designation (and type), Name and institution to which submitted.


**Reference to electronic sources (individual work):**

Author/editor. (Year). *Title* [online]. (Edition). Place of publication, Publisher (if ascertainable). Available from: URL [Accessed Date].

Reference to E-Journals

Author. (Year). Title. Journal Title [online], volume (issue), location within host. Available from: URL [Accessed Date].


Appendices

Appendices should be used where supporting material that would disrupt the flow of the main thesis is to be included. They are particularly useful for tables, questionnaires, programming codes and lists of information. Appendices should be divided to contain different types of information.

Once the thesis has been completed, please ask a colleague to read through it for you to check for errors and to ensure that the objectives set out were achieved.
# MSc in Engineering 2017-2018

<table>
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<th>Student name &amp; number</th>
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The Postgraduate Advisory Service is a unique and confidential service available to all registered postgraduate students in Trinity College. It offers a comprehensive range of academic, pastoral and professional supports dedicated to enhancing your student experience.

Who?

The Postgraduate Advisory Service is led by the Postgraduate Support Officer who provides frontline support for all Postgraduate students in Trinity. The Postgrad Support Officer will act as your first point of contact and a source of support and guidance regardless of what stage of your Postgrad you’re at. In addition each Faculty has three members of Academic staff appointed as Postgraduate Advisors who you can be referred to by the Postgrad Support Officer for extra assistance if needed.

Contact details of the Postgrad Support Officer and the Advisory Panel are available on our website: [http://www.tcd.ie/Senior_Tutor/postgraduate/](http://www.tcd.ie/Senior_Tutor/postgraduate/)

Where?

The PAS is located on the second floor of House 27. We’re open from 8.30 – 4.30, Monday to Friday. Appointments are available from 9am to 4pm.

Phone: 8961417

Email: pgsupp@tcd.ie

What?

The PAS exists to ensure that all Postgrad students have a contact point who they can turn to for support and information on college services and academic issues arising. Representation assistance to Postgrad students is offered in the area of discipline and/or academic appeals arising out of examinations or thesis submissions, supervisory issues, general information on Postgrad student life and many others. If in doubt, get in touch! All queries will be treated with confidentiality. For more information on what we offer see our website.

If you have any queries regarding your experiences as a Postgraduate Student in Trinity don’t hesitate to get in touch with us.
APPENDIX 5 – Academic Skills for Successful Learning

Skills4Study Campus has now been replaced by a Blackboard module called Academic Skills for Successful Learning designed by Student Development. This is available to all students from: http://mymodule.tcd.ie/

Student Learning Development

Student Learning Development is here to help you develop and master the academic skills to succeed at Trinity. The supports available include:

• Free workshops throughout the year on a variety of topics for students from all departments.

• A Blackboard module featuring a range of resources, including podcasts and interactive workshops that provide academic support to students. Topics include:
  o Time management
  o Presentation skills (incl poster presentations)
  o Procrastination and Concentration
  o Effective study skills
  o Writing skills
  o Exam skills

• Individual consultations – meet with a learning advisor to discuss your study issues.

• For more information please visit http://student-learning.tcd.ie

Other supports for learning in College include:

• The Maths Help Room, which provides informal help from Trinity students. It is located in the Maths Seminar Room, 2nd Floor, 18 Westland Row and is open on Monday-Friday, from 1-2pm

• The Programming Support Centre is available to all computer science and engineering students taking programming courses. See www.scss.tcd.ie/misc/psc

• Peer Learning is available in several of the modern language departments. It involves working with other students to get the most from your course to improve performance. E-mail us for further information: student.learning@tcd.ie
Accessing the Blackboard module:
Search for ‘Academic Skills for Successful Learning’ –

*Details to follow.*

Accessing the service:
Student Learning Development
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3rd Floor, 7-9 South Leinster Street
Dublin 2, Ireland
Web: [http://student-learning.tcd.ie](http://student-learning.tcd.ie)
Email: student.learning@tcd.ie
Phone: 01 896 1407