1E8 INTRODUCTION TO PROFESSIONAL ENGINEERING [5 credits]

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Module organisation  
The module runs for the first half (12 weeks) of the academic year and comprises of four lectures per week for the first six weeks followed by four tutorials/project sessions per week for five weeks (total of 48 hours contact time).

Module description, aims and contribution to programme  
The aim of the module is to introduce the students to the role of the professional engineer and what that entails. The key point of this module is to emphasise that there is more than a technical side to this role and that all decisions made and actions taken can have social, economic, ethical, regulatory and political implications. The module is designed to promote critical thinking and critical analysis skills, most importantly to begin to get students to deal with more open ended questions and develop the ability to work independently.

Learning outcomes  
Upon completion of this module, students will be able to:  
1. Understand the wider role of the professional engineer in society;  
2. Learn to articulate the ethical, economic, social, regulatory and political issues that also arise in the context of a technical project;  
3. Organise a team project by defining team roles and planning a set of tasks and actions;  
4. Manage a team project by checking progress and monitoring results;  
5. Self-structure a work programme around a set of open ended questions;  
6. Apply structured design processes to achieve design outcomes  
7. Provide evidence for ideas, concepts and suggestions;  
8. Write a well structured detailed report.

Module content  
The module involves 24 lectures, 6 each from Civil, Structural and Environmental Engineering; Mechanical and Manufacturing Engineering; Computer Science and Electronic and Electrical Engineering over the first six weeks. This is followed by 20 hours focused on project work.
The syllabus for the 24 hours of lectures is:
- Introduction to engineering
- Environmental issues in engineering
- Engineering ethics
- Engineering forensics
- Physical and cyber sustainability
- Group interaction and team collaboration
- Design processes and outcomes
- Survey design and trend identification
- Report writing

Teaching strategies
This module is taught using traditional lectures for the first six weeks. In the last five weeks, students work in groups to self-structure their agendas and workloads with appropriate supervision from lecturers and demonstrators in tutorial sessions.

Associated laboratory/project programme
In the second half of the semester, the class will be split into small groups and each group will have to produce a significant report. The broad topic of the report is specified and is different each year; an example from a previous year is: ‘How engineers can help improve human health and wellbeing in Ireland in 2020’. Each group is required to think of a specific subject within this broad topic (for example “Improving water quality in Dublin”) which they will research as a team.

Assessment
Assessment of this module is 100% based on the project report and an oral presentation by each group. Individual student marks are calculated based on group performance, individual contribution and attendance record. As 1E8 is assessed entirely on project work taken during the year, students who do not pass this module will be required to repeat the year in full.

Required textbook
There will be a very wide range of recommendations and they will be provided during the lectures.

Further information