Module Code	**MEU22EM3**
Module Name	**Design I**
ECTS Weighting[1]	5 ECTS
Semester taught	Semester 1
Module Coordinator/s	Assistant Professor Conor McGinn (c.mcginn@tcd.ie)
Module Learning Outcomes with reference to the Graduate Attributes and how they are developed in discipline	On successful completion of this module, students should be able to: 1. Develop a detailed product design specification. 2. Perform a systematic patent search and review. 3. To identify engineering standards that apply to a product or identify standards that might apply to a future prototype. 4. To develop and evaluate several design concepts. 5. To prepare a detailed embodiment design (including engineering drawings) using CAD. 6. To communicate their design through a presentation, and through the creation of technical documentation. **Module description, aims and contribution to programme** The goal of the module is to teach students the fundamental skills of systematic Engineering design. It aims to introduce students to the systematic engineering design process (VDI 2221), and to help them gain familiarity with widely used methods and techniques for optimizing the design of mechanical systems. The module also introduces students to intellectual property, standardization, and data protection. The course is also intended to introduce students to research activities being undertaken within the School of Engineering. Where appropriate, assignments are inspired based on on-going research and innovation activities currently being conducted at Trinity. **Graduate Attributes: levels of attainment** To act responsibly - Introduced To think independently - Introduced To develop continuously - Introduced To communicate effectively - Introduced

[1] TEP Glossary

Module Content

- Introduction to systematic design and VDI 2221 standard
- Writing and structuring technical design documents
- Intellectual property and standardisation
- Competitive benchmarking
- Preparing product design specifications
- Conceptual design
- Embodiment design
- Concept evaluation

Teaching and Learning Methods

The module will be taught 100% online for the 2020-21 academic year. Lectures will be made available through pre-recorded videos which will be shared at the beginning of each week. Weekly scheduled video conferences will provide the opportunity for one-on-one and group feedback to be provided.

Assessment Details[2]

Please include the following:

- **Assessment Component**
- **Assessment description**
- **Learning Outcome(s) addressed**
- **% of total**
- **Assessment due date**

Assessment Component	Assessment Description	LO Addressed	% of total	Week due
Assignment	Bi-weekly Assignment	1-6	60%	W1-10
Assignment	Design Report	4,5	30%	11
Assignment	24 hour design challenge	1-6	10%	12

Reassessment Requirements

1. An individual design project carried out over the summer months.
2. Submission of a design document, detailing the application of systematic design principles to the individual design project.

Contact Hours and Indicative Student Workload[3]

Contact hours: 33 Hours
Independent Study (preparation for course and review of materials): 5 hours
Independent Study (preparation for assessment, incl. completion of assessment): 36 hours

Recommended Reading List

Pahl, Gerhard, and Wolfgang Beitz. *Engineering design: a systematic approach*. Springer Science & Business Media, 2013.

[2] TEP Guidelines on Workload and Assessment

	Lecture notes are provided electronically, and recommended reading lists are given out where appropriate in advance of classes.
Module Pre-requisite	N/A
Module Co-requisite	N/A
Module Website	N/A
Are other Schools/Departments involved in the delivery of this module? If yes, please provide details.	No
Module Approval Date	
Approved by	
Academic Start Year	
Academic Year of Date	