

Module Template for New and Revised Modules¹

Module Code	CEU22E09
Module Name	Engineering Design III
ECTS Weighting²	5 ECTS
Semester taught	Semester 1
Module Coordinator/s	Mr. Tom Grey
Module Learning Outcomes with reference to the Graduate Attributes and how they are developed in discipline	<p>On successful completion of this module, students should be able to:</p> <p>LO1. Apply simple engineering theories to solve design problems.</p> <p>LO2. Interpret a design brief, define a design problem, and carry out a design process.</p> <p>LO3. Conduct analysis, calculations, and detailed design of a new structure</p> <p>LO4. Construct simple prototype design models and use these to conduct experiments, analysis and refinement of a design.</p> <p>LO5. Apply basic thinking around the human-environment interaction and the ethical and environmental issues involved in designing the built environments, structures, or products.</p> <p>LO6. Keep a design journal as part of the research, analysis, and design process</p> <p>LO7. Work effectively as an individual and as a team member</p> <p>LO8. Clearly communicate a design/solution to experts and non-experts using design statements, engineering drawings, calculations, models, and other methods</p> <p>Graduate Attributes: levels of attainment</p> <p>To act responsibly - Introduced</p> <p>To think independently - Introduced</p> <p>To develop continuously - Enhanced</p> <p>To communicate effectively - Enhanced</p>
Module Content	<p>Engineering Design III (2E09) runs throughout the first semester and comprises of a research, design and prototype model building exercise. Students will have a one-hour online lecture coupled with a weekly two-hour design workshop (lab) where students work in existing laboratory groups. The module utilises engineering and environmental theory covered in modules 2E04 Solids and Structures and 2E07 Engineering and environment.</p> <p>Module aims</p> <p>The aims of this module are as follows:</p>

¹ [An Introduction to Module Design](#) from AISHE provides a great deal of information on designing and re-designing modules.

² [TEP Glossary](#)

- To promote independent inquiry led learning
- To put engineering theory into practice
- To understand and respond in design terms to how people interact through and with their physical environment
- To understand the design process and implement design solutions in practice
- To develop team building skills and understand both face-to-face and online teamwork.

Teaching and Learning Methods

Mixture of formal lectures, lab-based (design studio style) staff and student engagement, group interaction and peer-to-peer learning, independent inquiry led learning, and hands-on practical model making and embodied learning.

Assessment Details³

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
Design Journal	Design journal in the form of physical sketchbook used by students as part of their design process i.e. to record research, and investigate/analyse key concepts, ideas and components in relation to their project.	LO6, 7	30	16
Group report	Present the key research and design process undertaken by the group, and present the main results, outcomes and learning from the project.	LO1, 2,3,4,5,7,8	40	16
Group prototype model	Provide a physical and working prototype scale model of the final design.	LO4, 8	30	16

Reassessment Requirements

Reassessment will be by examination only. Students must pass the examination element of the module to avoid the possibility of reassessment.

Contact Hours and Indicative Student Workload³

Contact hours: 11 weeks x 4hrs per weeks= 44 hours (1x 1 hour weekly lecture and 1x3hour labs/studio session)

³ [TEP Guidelines on Workload and Assessment](#)

	<p>Independent Study (preparation for course and review of materials): 30</p> <p>Independent Study (preparation for assessment, incl. completion of assessment): 40</p>
Recommended Reading List	<p>Further to the references on the 2E04 Solids and Structures and 2E08 Materials modules, the following texts and sources will be useful:</p> <ul style="list-style-type: none"> • The Field Guide to Human-Centered Design (IDEO) https://www.designkit.org/resources/1 • Eleven lessons: managing design in eleven global brands-A study of the-design process (Design Council) https://www.designcouncil.org.uk/news-opinion/what-framework-innovation-design-councils-evolved-double-diamond • Universal Design Handbook (2E) (Wolfgang Preisler and Korydon Smith) http://universaldesign.ie/What-is-Universal-Design/ • Learning Journals: A Handbook for Reflective Practice and Professional Development (Jennifer A. Moon) • Tony Hunts Second Sketch Book (Tony Hunt) • Tony Hunts Structures Notebook (Tony Hunt)
Module Pre-requisite	None
Module Co-requisite	Not applicable
Module Website	https://www.tcd.ie/Engineering/undergraduate/baiyear2/modules/2E9.pdf
Are other Schools/Departments involved in the delivery of this module? If yes, please provide details.	No other schools
Module Approval Date	
Approved by	
Academic Start Year	2022
Academic Year of Date	2022/2023