Module Code	CEU22E09
Module Name	Engineering Design III
ECTS Weighting[1]	5 ECTS
Semester taught	Semester 1
Module Coordinator/s	Tom Grey
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: LO1. Apply simple engineering theories to solve design problems. LO2. Interpret a design brief, define a design problem, and carry out a design process. LO3. Conduct analysis, calculations, and detailed design of a new structure LO4. Construct simple prototype design models and use these to conduct experiments, analysis and refinement of a design. LO5. Apply basic thinking around the human-environment interaction and the ethical and environmental issues involved in designing the built environments, structures, systems, or products. This will include bringing together universal design (inclusive design) and sustainable design (including climate action). LO6. Keep a design journal as part of the research, analysis, and design process LO7. Work effectively as an individual and as a team member LO8. Clearly communicate a design/solution to experts and non-experts using design statements, engineering drawings, calculations, models, and other methods **Graduate Attributes: levels of attainment** To act responsibly - Introduced To think independently - Introduced To develop continuously - Enhanced To communicate effectively - Enhanced

[1] TEP Glossary

Module Content

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.

Module aims

The aims of this module are as follows:

- 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 the built environment
- To bring together sustainable design and universal design (inclusive design) in the context of the built environment.
- To understand the design process and implement people-centred 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 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
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

[2] TEP Guidelines on Workload and Assessment

	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 Workload[2]	**Contact hours: 11 weeks x 4hrs per weeks= 44 hours (1x 1 hour weekly lecture and 1x3hour labs/studio session)** **Independent Study (preparation for course and review of materials): 30** **Independent Study (preparation for assessment, incl. completion of assessment): 40**
Recommended Reading List	Further to the references on the 2E04 Solids and Structures and 2E08 Materials modules, the following texts and sources will be useful: • 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 Preiser 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	2024
Academic Year of Date	2024/2025