Module Code	CEU11E20
Module Name	Materials Applications
ECTS Weighting[1]	5 ECTS
Semester taught	Semester 1
Module Coordinator/s	Prof. David Igoe (igoed@tcd.ie)
Module Learning Outcomes with reference to the Graduate Attributes and how they are developed in discipline	Upon completion of this module, students will be able to: LO1. Understand the applications and use cases for different materials used in Civil, Structural, Mechanical, Biomedical and Electrical Engineering. LO2. Comprehend the effect of a materials physical properties on the outcomes of real world case histories. LO3. Recognize the environmental impact of materials and the importance of sustainability in engineering. LO4. Comprehend how materials can be altered / substituted / replaced / recycled in order to improve sustainability. **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	This introductory module provides a broad foundation of materials applications in engineering, focusing on different materials used in each engineering discipline. The covered topics include: • Introduction to concrete technology, reinforced and prestressed concrete. • Introduction to alternative concrete in order to reduce CO2 emissions • Introduction to glass and timber as building materials • Introduction to materials for Biomedical Engineering • Introduction to materials for Mechanical Engineering • Introduction to materials for Electrical and Electronic Engineering
Teaching and Learning Methods	The module is primarily taught delivered through podium lectures. The module will require an active participation of the students. Attendance at lectures is mandatory. The module will be assessed at the end of the semester.

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
Examination	Examination (MCQ)	1,2,3,4	80	Examination Week
Lab Practicals	Lab Report	1,2	20	Week 12

Reassessment Requirements	Reassessment will be by examination only.

Contact Hours and Indicative Student Workload[2]	Contact hours: 35 hours Independent Study (preparation for course, review of materials, 2 x 1hours lab practicals + Lab report): 50 hours Independent Study (preparation for exam, incl. completion of exam): 30 hours
Recommended Reading List	*Lecture notes provided* *Engineering Materials 1&2: An Introduction to Properties, Applications and Design*, Ashby and Jones
Module Pre-requisite	None
Module Co-requisite	None
Module Website	None
Are other Schools/Departments involved in the delivery of this module?	No other schools or departments are involved.
Module Approval Date	
Approved by	
Academic Start Year	September 2025
Academic Year of Date	2025/26

[2] TEP Guidelines on Workload and Assessment