Module Code	MEU44B01
Module Name	4B1 MECHANICS OF SOLIDS
ECTS Weighting	5 ECTS
Semester taught	Semester 2
Module Coordinator/s	Assistant Professor Mark Ahearne
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. Demonstrate a fundamental knowledge of the theory of elasticity, including equilibrium equations, compatibility equations, boundary conditions, stress functions etc; LO2. Use stress functions to determine the stress distribution in a number of engineering structures, given the appropriate boundary conditions; LO3. Understand the importance of the theory of elasticity in the design of engineering components; LO4. Determine the suitability of specific viscoelastic models for different materials and different mechanical tests LO5. Calculate the mechanical behaviour of laminates in different orientations **Graduate Attributes: levels of attainment** To act responsibly - Enhanced To think independently - Enhanced To develop continuously - Enhanced To communicate effectively – Enhanced
Module Content	Mechanics of Solids expands upon fundamental topics developed in the third-year module 3B3. A more fundamental view is taken of the theory of elasticity. The use of stress functions is developed and applied to problems such as thick-walled pressure vessels and holes in plates. Rheological models are used to describe viscoelastic behaviour of materials. The mechanical characteristic of laminate structures are examined.
Teaching and Learning Methods	Lectures: The teaching strategy follows several different textbooks that examine different aspects of mechanics of solids. Tutorials: Tutorials follow a series of question sheets, with problems similar to exam questions. The solutions for these are available online and are released gradually as the module progresses. The tutorials are given to class groupings and are informal. Tutorials are attended by teaching assistants or by the lecturer, to provide formative feedback (e.g., on the micro-project work). No assessment of tutorial performance is noted.

Assessment Details
Please include the following:

Assessment Component	Assessment Description	LO Addressed	% of total	Week due

• **Assessment Component** • **Assessment description** • **Learning Outcome(s) addressed** • **% of total** • **Assessment due date**	Written exam	End of semester examination	1-5	85	Exam period
	Assignment	Written report	5	15	Week 31

Reassessment Requirements	Written examination
Contact Hours and Indicative Student Workload Error! Bookmark not defined.	**Contact hours: 40 (32 lectures, 8 tutorials)** **Independent Study (preparation for course and review of materials): 50** **Independent Study (preparation for assessment, incl. completion of assessment): 25**
Recommended Reading List	Elasticity Theory, Applications and Numerics, Sadd, Elsevier Theory of Elasticity, Timoshenko, McGraw-Hill Mechanics of Materials, Gere, 5th edition, Nelson Thornes
Module Pre-requisite	3B3 Mechanics of Solids (or equivalent)
Module Co-requisite	Not applicable
Module Website	https://www.tcd.ie/media/tcd/engineering/pdfs/current-students/MEU44B01.pdf
Are other Schools/Departments involved in the delivery of this module?	No
Module Approval Date	
Approved by	
Academic Start Year	
Academic Year of Date	