Module Code	MEU11E19
Module Name	Engineering Practice 1
ECTS Weighting	5 ECTS
Semester taught	Semester 1
Module Coordinator/s	Associate Prof. John Kennedy (john.kennedy@tcd.ie) Overall Coordinator Prof. Dan Kilper (dan.kilper@tcd.ie) Asst. Prof. Aimee Byrne (aimee.byrne@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: L1. identify the sources and nature of experimental error; L2. identify and quantify the static and dynamic characteristics of instruments; L3. understand the role of calibration in the use of common engineering sensors L4. apply simple electrical principles in sensing application e.g. resistance strain measurement and the Wheatstone bridge; L5. select sensors for temperature, strain, sound and fluid low L6. outline the issues around the digitisation of experimental data; L7. explain the nature of the analogue-to-digital and digital-to-analogue conversion processes; L8. perform calculations on the requirements of data conversion applications in experimental scenarios; L10. Produce two-dimensional images from three-dimensional images and vice versa L11. Produce two-dimensional images of three-dimensional objects using appropriate software L12. Interpret and extract information from two-dimensional representations of three-dimensional objects **Graduate Attributes: levels of attainment** To act responsibly - Enhanced To think independently - Enhanced To develop continuously - Enhanced To communicate effectively - Enhanced

Module Content

The ability to conduct accurate and repeatable measurements from reliable sensors is an essential task of the professional engineer. The proliferation of sensors both physical and virtual has revolutionised engineering design workflows. This modules aim to provide exposure to the concepts and processes of modern engineering measurement and experimental techniques. The module prepares students for conducting their first experiments in engineering and exploiting the data gathered with modern toolsets. Students will study the role of error and uncertainty in measurement and data analysis, the operating principles of commonly used measurement devices and the principles of data conversion including analogue to digital converters and digital to analogue converters.

The drawing components of this module will introduce students to the basic concepts of engineering drawing. While drawings are a key part of many engineers' work, this is a part of engineering practice that has changed fundamentally in recent decades with the widespread availability of computers. In light of this, the module aims to teach students the basics rules of engineering drawing, how to effectively produce quick sketches by hand and how to produce detailed drawings using industry-relevant software.

Teaching and Learning Methods

The module content is introduced through a combination of lectures and tutorials.

During the module the students will utilise knowledge gained to critique a series of online experiments and perform the associated data analysis tasks. This repeated learning cycle, conducted in a blended learning environment, will prepare the students to conduct real-world experiments in their studies as an engineer.

Drawing tutorials include the production of drawings by-hand, and using industry-relevant software, as well as the interpretation of same.

Assessment Details
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 (provisional)
Written examination	End of semester examination	1-12	60	Exam period
Assignments J Kennedy	Online web series experiments	1-6	15	Staggered every 2 weeks
Assignments Byrne	Drawing and computer based tutorials	10-12	25	Week 9-12

Reassessment Requirements

Written Examination

Contact Hours and Indicative Student Workload Error! Bookmark not defined.	**Contact hours: 40 (29 Lectures, 11 tutorials)** **J Kennedy 5 weeks –** **15 lectures, 5 tutorials** **D Kilper 2 weeks –** **6 lectures, 2 tutorials** **A Byrne – 4 weeks** **8 lectures, 4 tutorials**
	Independent Study (preparation for course and review of materials): 30
	Independent Study (preparation for assessment, incl. completion of assessment): 44
Recommended Reading List	Experimental Methods: An Introduction to the Analysis and Presentation of Data, Les Kirkup, Wiley (J Kennedy text book) Slade, Ron. Sketching for Engineers and Architects. Routledge, 2016
Module Pre-requisite	NA
Module Co-requisite	NA
Module Website	XXX
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	September 2025
Academic Year of Date	2025/2026