Module Code	**MEU11EM4**
Module Name	**Introduction to Computing**
ECTS Weighting[1]	5 ECTS
Semester taught	Semester 1
Module Coordinator/s	Associate Professor Kevin Kelly kevin.kelly@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: 1. Understand the concepts of constants and variables in computer programming 2. Write basic sequential programs using Matlab to analyze engineering problems 3. Use programming control structures such as conditional statements and loops to execute algorithms 4. Use functions and sub-functions, including library and user-defined functions 5. Process textual information 6. Use data structures and cell arrays 7. Low-level read and write to and from file storage 8. Plot data using MATLAB 9. Translate a design brief into a robust, functioning program 10. Layout, comment, explain and debug code **Graduate Attributes: levels of attainment** To act responsibly - Not embedded To think independently - Enhanced To develop continuously - Enhanced To communicate effectively - Enhanced

[1] TEP Glossary

Module Content	The aims of this module are: • Establish a good foundation in computer programming for engineering. • Analyse engineering problems and design algorithms in a structured logically way using MATLAB **Module Content** • Introduction to MATLAB environment • Vectors and Matrices • Selection Statements • Loop Statements and Vectorising Code • Debugging • String Manipulation • Functions • Data Structures • File Input and output • Plotting • Image processing
Teaching and Learning Methods	This module is not the study of computer science, but rather it teaches students to use computers to aid in the analysis of engineering problems. The module is taught using a combination of lectures and computer laboratories. Each week there is one podium lecture where new material is introduced and discussed. There is a two hour laboratory session where each student sits at a dedicated PC and works on that week's assignments. There is also an additional one hour laboratory session in which difficult aspects of the previous session are revised and a new assignment is worked on. This final session allows for a degree of equalizing of students' progress on the essential aspects of the module. Assistance is available during these sessions from both the course lecturer and a teaching assistant One major assignment, bringing together the key concepts taught in the module. These are given before reading week and in the final weeks of the module. Students are required to present their code individually,

	explaining the logic of their code and the implications of making any changes, and to provide evidence of a structured development towards meeting the assignment objectives.

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
Assignments	Graded computer laboratory assignments and attendance (100%). Continuous Assessment (100%)	1 through 10	100 %	Weekly

Reassessment Requirements

Further Information

As 1MEMS4 is assessed entirely through continuous assessment during the year, students who do not satisfactorily engage will be issued with Non-Satisfactory forms and may be required to repeat the year in full. Reassessment of continuous assessment will need to be discussed with lecture on case by case basis.

Contact Hours and Indicative Student Workload[2]

Contact hours: 44 Hours
Independent Study (preparation for course and review of materials): 10 hours

[2] TEP Guidelines on Workload and Assessment

	Independent Study (preparation for assessment, incl. completion of assessment): 46 hours. Weekly laboratory assignment associated with each aspect of the syllabus.
Recommended Reading List	• Matlab: A Practical Introduction (Paperback), Attaway, Butterworth-Heinemann, 2009 **SUPPLEMENTARY TEXT(S)** • Introduction to Matlab 7; Etter, Kuncicky & Moore, Prentice Hall, 2005 • Introduction to Engineering Programming, Solving Problems with algorithms, Holloway, Wiley, 2004
Module Pre-requisite	None
Module Co-requisite	None
Module Website	None
Are other Schools/Departments involved in the delivery of this module? If yes, please provide details.	No
Module Approval Date	31/08/2023
Approved by	Nicole Byrne
Academic Start Year	2025
Academic Year of Date	2025-2026