Module Code	MEU44B09
Module Name	Control Engineering 1
ECTS Weighting[1]	5 ECTS
Semester taught	Semester 2
Module Coordinator/s	Asst. Prof. Dermot Geraghty
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. Draw a block diagram for a control system starting with a schematic of the system and find the overall transfer function for the system LO2. Identify and analyse the performance of 1st and 2nd order systems using s-plane analysis LO3. Use the root locus as a design tool to alter the response of a control system/ plant by introducing a compensator LO4. Use Matlab Control Systems Toolbox to analyse and design control systems LO5. Understand how to apply PID Control to a DC motor **Graduate Attributes: levels of attainment** To act responsibly - Enhanced To think independently - Enhanced To develop continuously - Enhanced To communicate effectively - Enhanced
Module Content	This course introduces the student to various systems of continuous control of electrical, electronic, mechanical and combined systems. First and second order systems are studied, with extensions to higher order systems using approximate methods and computer modelling (using Matlab). Aspects of control systems which are discussed include stability, steady state error and frequency response. Techniques covered include transfer functions, block diagram algebra, the root-locus method and frequency response design methods.

Teaching and Learning Methods	This module uses Blackboard, podium lectures, self learning, a laboratory session and tutorials to help students achieve the required learning outcomes. In the current Covid-19 situation or in a new lockdown situation, the following changes to the normal teaching methods apply: 1. All lectures and tutorials will be delivered online. 2. Recorded lectures will be available on Blackboard 3. The end of semester exam will be online.

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 (provisional)
Written Examination	End of Semester examination	LO1-LO4	85%	Exam Period
Laboratory Exercise	Staggered throughout semester	LO4-LO5	15%	Staggered throughout Semester
Self Learning Exercise	Entire Semester	LO1-LO4	0	No submission required

Reassessment Requirements	Written Examination

Contact Hours and Indicative Student Workload[2]	**Contact hours: 46 (33 Lectures, 11 tutorials, 1 Lab)** **Independent Study (preparation for course and review of materials): 30** **Independent Study (preparation for assessment, incl. completion of assessment): 40**
Recommended Reading List	Control Systems Engineering by Norman S. Nise, Wiley. E-book is available via the College Library
Module Pre-requisite	None
Module Co-requisite	None

Module Website	Blackboard
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	
Academic Year of Date	