

School of Engineering							
Module Code	Module Title	ECTS	Semester	% Exam	% CA	Pre-requisite	Notes
MEU11EM1	Introduction to Manufacturing	5	Semester 1	60	40	None	
EEU11E12	Engineering Materials and their Applications	10	Semester 1	50	50	None	
MEU11E08	Introduction to Professional Engineering	5	Semester 1	20	80	None	
MEU11E14	Experimental Methods and Data Centric Engineering	5	Semester 1	75	25	None	
CEU11E07	Mechanics	5	Semester 2	90	10	None	
CSU11E03	Computer Engineering I	5	Semester 2	70	30	None	
EEU11E06	Electrical Engineering	5	Semester 2	85	15	Leaving Cert Honours Mathematics (or equivalent)	
CEU11E09	Engineering Design I: Graphics and CAE	5	Semester 2	80	20	None	
MAU22E01	Engineering Mathematics III	5	Semester 1	90	10	MAU11E01 Engineering mathematics I	Pre-Requisite: MAU11E02 Engineering mathematics II
MEU22EM2	Finance	5	Semester 1	40	60	None	
MEU22EM3	Design I	5	Semester 1		100	None	
MEU23B10	3D Computer Aided Design	5	Semester 1		100	None	
EEU22E06	Electronics	5	Semester 1	70	30	1E6 Electronics or equivalent	
CEU22E07	Engineering and the Environment	5	Semester 1	70	30	None	
CSU22E03	Computer Engineering II	5	Semester 1	80	20	CSU11E03 and a working knowledge and ability to programme in C	
CEU22E04	Solids and Structures	5	Semester 1	85	15	1E7 Mechanics	
CEU22E09	Engineering design III: Project	5	Semester 1		100	None	

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MAU22E02	Engineering Mathematics IV	5	Semester 2	50	50	Natural continuation of the Junior Freshman modules MAU11E01 Engineering Mathematics I and MAU11E02 Engineering Mathematics II, and a companion module to the Senior Freshman module MAU22E01 Engineering Mathematics III.	
MEU22E05	Thermo-fluids	5	Semester 2	70	30	None	
EEU22E12	Computational Science and Engineering	5	Semester 2	65	35	Mathematics (JF), Physics, Basic knowledge of Linear Algebra (JF Level)	
EEU22E10	Engineering design IV: Project	10	Semester 2		100		
MAU33E01	Engineering Mathematics V	5	Semester 1	80	20	None	
EEU33E03	Probability and Statistics	5	Semester 2	100		Engineering Mathematics (up to Year 2 incl.)	
MEU33B01	Thermodynamics	5	Semester 2	80	20	2E5 Thermo-fluids	
EEU33C01	Signals and Systems	5	Semester 1	90	10	2E1 Engineering Mathematics III and 2E2 Engineering Mathematics IV	
MEU33B02	Fluid Mechanics	5	Semester 1	85	15	MEU2205	
MEU33B04	Mechanical Engineering Materials	5	Semester 1	50	50	CEU22E08 Materials or MEU22M04 Materials or equivalent module	
MEU23B10	3D Computer Aided Design	5	Semester 1		100		
MEU33B10	Universal Design Innovation	5	Semester 1		100	None	
MEU33B03	Mechanics of Solids	5	Semester 2	90	10	1E7 Mechanics (or equivalent) and 2E4 Solids and Structures (or equivalent)	
MEU33B05	Mechanics of Machines	5	Semester 2	80	20	MEU11E07 Mechanics	
MEU33B07	Manufacturing Technology and Systems	5	Semester 2	10	90		

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CEU33A02	Structural Design	5	Semester 1	85	15	2E4 or similar introduction to structural mechanics	
CEU33A05	Soil Mechanics	5	Semester 1	80	20	Mechanics of Solids	
CEU33A07	Transportation and Highway Engineering	5	Semester 1	100			
CEU33A12	Civil Engineering Design Challenge	10	Semester 1	83	17		
CEU33A08	Geology for Engineers	5	Semester 2	100		None	
CEU33A10	Surveying and Geo-spatial Planning	5	Semester 2	50	50		
CEU33A11	Fluids and Environment	5	Semester 2	60	40		
CEU33A04	Structural Analysis	5	Semester 2	100		Ability to analyse statically determinate structures	
EEU33C01	Signals and Systems	5	Semester 1	90	10	2E1 Engineering Mathematics III and 2E2 Engineering Mathematics IV	
CSU33D01	Microprocessor Systems I	5	Semester 1	90	10	None	
CSU33D05	Data Structures and Algorithms	5	Semester 1	60	40	CSU22E03 or alternative non-module prerequisites: good working knowledge of C and/or C++	
EEU33C02	Digital Circuits	5	Semester 2	80	20	Successful Completion SF year of BAI programme	
EEU33C03	Analogue Circuits	5	Semester 2	85	15	EEU22E06 or equivalent	
EEU33C07	Digital Systems Design	5	Semester 2	50	50	EE1E6 or equivalent	
EEU33C05	Telecommunications	5	Semester 2	70	30		

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CSU23021	Microprocessor Systems II	5	Semester 2		100	CSU1021 & CSU1022 or CSU33D01 Or A basic working knowledge of the ARM instruction set and some familiarity with the C programming language, GDB debugger, Git revision control system and Visual Studio Code IDE.	
CSU33D03	Computer Networks	5	Semester 2	30	70	None	
CSU23016	Operating Systems and Concurrent Systems	5	Semester 2	80	20	SF Computer Science: either CSU22014 (Systems Programming, Semester 1) or CSU22061 (Intermediate Programming, Semester 1) and JS Engineering: CSU11E03 (Computer Engineering I, Semester 2) and CSU22E03 (Computer Engineering, Semester 1) OR The programming exercises all use the C programming language so some familiarity and experience with C is required.	
CSU33D06	Software Design and Implementation	5	Semester 2		100	None	
EEU33C08	Digital Circuits Design	5	Semester 2		100	Intermediate Multisim Proficiency	
EEU33C09	Analogue Circuit Design	5	Semester 2	100		EEU22E06 or equivalent	Module Co-requisite EEU33C03 (suggested)
CEU44E01	Managementfor Engineers	5	Semester 1	50	50		
MEU44E03	Engineering Research Methods	5	Semester 1		100	None	
MEU44B04	Heat Transfer	5	Semester 1	80	20	3B2 Fluid Mechanics or equivalent	

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MEU44B07	Computer Aided Design	5	Semester 1		100	Some experience with CAD drawing using a professional software package (e.g., SOLIDWORKS, AutoCAD, CREO, ANSYS, etc) and a basic understanding of finite element analysis (e.g., 3B8, 2E11)	
MEU44B13	Fluid Mechanics 2	5	Semester 1	60	40	3B2 Fluid Mechanics (or equivalent)	
MEU44B17	Multibody Dynamics	5	Semester 1	70	30		
MEU44B01	Mechanics of Solids	5	Semester 2	85	15	MEU33M03 Mechanics of Solids	
MEU44B02	Forensic Materials Engineering	5	Semester 2	70	30	3B4 Mechanical Engineering Materials or equivalent	
MEU44B05	Manufacturing Technology	5	Semester 2	20	80		
MEU44B06	Manufacturing Systems and Project Management	5	Semester 2		100	None	
MEU44B10	Turbomachinery	5	Semester 2	100		3B1 Thermodynamics, 3B2 Fluid Mechanics, 4B13 Fluid Mechanics	
EEU44C08	Digital Image and Video Processing	5	Semester 2	75	25	EEU33C01 (Signals and Systems)	
MEU44B14	Engineering Vibration and Noise	5	Semester 2	75	25		
MEU44B12	Introduction to Autonomous Mobile Robotics	5	Semester 2	30	70		
MEU33B07	Manufacturing Technology I	5	Semester 2		100		
CEU44E03	Research Methods	5	Semester 1		100	None	
CEU44A031	Environmental Engineering	5	Semester 1	75	25		
CEU44A04	Hydraulics	5	Semester 1	75	25		
CEU44A51	Geotechnical Engineering	5	Semester 1	80	20	CEU33A5	
CEU44A61	Structures 1	5	Semester 1	50	50	3A2 or similar introduction to structural design	

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CEU44A01	Civil Engineering Materials	5	Semester 2	80	20	1 st / 2nd year modules in Chemistry and Materials.	
CEU44A02	Hydrogeology and Engineering Geology	5	Semester 2	100			
CEU44A62	Structures 2: Advanced Design of Structures	5	Semester 2	85	15		
CEU44A08	Transportation	5	Semester 2	60	40		
EEU44E03	Research Methods	5	Semester 1	40	60	None	
CSU22021	Computer Architecture II	5	Semester 1	60	40	Assembly language and C/C++ programming	
EEU44C04	Next Generation Networks	5	Semester 1	100		Prerequisite module: EEU3C05 Telecommunications. Other/alternative non-module prerequisites: General knowledge of networking protocols and transmission.	
EEU44C05	Digital Signal Processing	5	Semester 1	100		3C1 Signals and Systems 3E3 Probability and Statistics 3E1 Engineering Mathematics V	
EEU44C07	Self-Organizing Systems	5	Semester 1	90	10	Mathematics (JS), Physics, Signal Processing (preferably JS), Basic knowledge of Linear Algebra and Probability and Statistics.	
EEU44C16	Deep Learning and its Applications	10	Semester 1	60	40		
CSU22041	Information Management II	5	Semester 1				
CSU34021	Computer Architecture II	5	Semester 1	60	40	Assembly language and C/C++ programming	
CSU44052	Computer Graphics	5	Semester 1	40	60	High level of C or C++ programming is essential, at least freshman-level mathematics	
CSU44053	Computer Vision	5	Semester 1	90	10	None	

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EEU44C01	Integrated Systems Design	5	Semester 1	70	30	EE3C7 or equivalent	
EEU44C02	Microelectronic Circuits	5	Semester 2	80	20	EEU33C03 or equivalent	
MEU44B09	Control Engineering	5	Semester 2	85	15	None	
EEU44C08	Digital Image and Video Processing	5	Semester 2	75	25	EEU33C01 (Signals and Systems)	
EEU44C21	Open Reconfigurable Networks	5	Semester 2	20	80		
CSU44D02	Knowledge Engineering	5	Semester 2	100		Programming languages, specified topics, etc. This information will be particularly relevant for visiting students or students taking this module as an approved module (if applicable)	
MEU44BM4	Experimental and Research Methods	5	Semester 1		100		
MEU44BM5	Biomechanics	5	Semester 1	80	20	ME7B04 Basic Medical Sciences	
MEU44BM6	Biomaterials	5	Semester 1	80	20	None	
MEU44EM3	Supply Chain Management	5	Semester 1				
MEU44EM9	User Centred Design Innovation	5	Semester 1		100		
ME5E3	Innovation in Product Development	15	Semester 1 & 2				
ME5B03	Advanced Thermal Fluid Sciences	10	Semester 2	15	85	4B4 Heat Transfer, 4B13 Fluid Mechanics	
ME5B09	Control Engineering II	5	Semester 1	60	40	None	
ME5B10	Instrumentation and Experimental Techniques	5	Semester 2	60	40	None	
ME5E4	Introduction to Computational Fluid Mechanics	5	Semester 1		70	Foundation courses in Numerical Methods (e.g. 2E11/3E2), Fluid Mechanics (e.g. 3B02, 4B13), and Heat Transfer (e.g. 4B04)	

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MEP55B15	Low Carbon Transport Technology	10	Semester 1 & 2		100		
MEP55B16	Low Carbon Power Technology	10	Semester 1 & 2		100		
CE7C04	Façade Engineering	5	Semester 1	50	50	Minimal working knowledge of AutoDESK / REVIT Familiarity with basic thermal transfer characteristics	Advancement through knowledge of REVIT, SEAI's SBEM performance analysis tool
CEP55E03	Air Pollution: Monitoring, Assessment & Control	5	Semester 1				
CE7J02	Solar Energy Conversions and Applications	5	Semester 1	50	50	None	
CE7J04	Energy Policy and Demand	5	Semester 1	75	25	None	
CE7E07	Sustainable Water Supply and Sanitation	5	Semester 1	70	30	None	
CE7S01	Geotechnical Engineering	5	Semester 1	85	15	Students must have successfully completed an undergraduate module(s) in Soil Mechanics and (or) Geotechnical Engineering	
CE7S02	Advanced Computation for Structures	5	Semester 1	40	60	Module participants are expected have completed an undergraduate degree in engineering, maths-physics or similar. Students should have a good understanding of mechanics of solids, structural analysis using stiffness method and should be familiar with differential equations.	
CE7S03	Wind and Earthquake Engineering	5	Semester 1	70	30	Any textbook on structural dynamics. Clough and Penzien is recommended. Web resources to be identified in class.	

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CE7T01	Transportation Policy	5	Semester 1	50	50		
CE7T02	Transport Modelling and Planning	5	Semester 1	50	50		
CE7E04	Waste Management and Energy Recovery	5	Semester 2	70	30	Chemistry and environmental engineering background	
CE7E05	Water Quality and Hydrological Modelling	5	Semester 2	70	30		
CE7E06	Water Resource Planning and Climate Change	5	Semester 2	80	20	No specific pre-requisite, but previous engineering hydrology module helpful	
CE7J01	Wind Energy	5	Semester 2	80	20	None	
CE7J06	Wave and Hydro Energy	5	Semester 2	80	20	Mechanics (1styear), Fluid Mechanics (2nd or 3rd year)	
CE7S04	Bridge Engineering	5	Semester 2		100		
CE7S05	Advanced Concrete Technology	5	Semester 2	90	10	None	
CE7S06	Soil Structure Interaction	5	Semester 2	80	20	CEU33A5, CEU44A51	
CE7T04	Transportation Data and Evaluation	5	Semester 2	75	25	Engineering or Sciences Primary Degree	
EE5P5C03	Statistical Signal Processing	10	Semester 1	85	15	Digital Signal Processing (e.g. 4C5); Probability and Statistics (e.g. 3E3); Signals and Systems (e.g. 3C1); Engineering Mathematics (up to Year 3 incl.)	
EEP55C07	Self-Organizing Systems	5	Semester 1	50	50	Mathematics (JS), Physics, Signal Processing (preferably JS), Basic knowledge of Linear Algebra and Probability and Statistics.	
EE5C16	Deep Learning and its Applications	10	Semester 1	60	40		
EEPMMT07	Audio Engineering	5	Semester 1		100	None	

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EEP55C23	Computation for Transport Engineering	5	Semester 1	40	60		
EE5M01 / EEU44C01	Integrated Systems Design	5	Semester 1	70	30	EE3C7 or equivalent	
EEP55C22	Computational Methods	10	Semester 1 & 2		100		
EEMT17	Spatial Audio	5	Semester 2		100	Students will need some prior knowledge of the fundamentals of DAWbased audio production, such as that presented in the Electroacoustic Composition 1 module in the first semester of the MMT programme, for example.	
EE5C01	Motion Picture Engineering	10	Semester 2		100	An introduction to DSP and Image Processing would be useful	
EEMT21	Introduction to XR: Applications and Technologies	5	Semester 2		100	None	
EEP55C25	Algorithms for Quantum Computing	5	Semester 2	40	60		
EEP55C24	Simulations for Geophysical Modelling	5	Semester 2	40	60		
EE5M02 / 4C2	Microelectronics	5	Semester 2	80	20	EEU33C03 or equivalent	
EEP55M08 / 4C8	Image and Video Processing	5	Semester 2	75	25	EEU33C01 (Signals and Systems)	
MEP56BM9	Medical Device Design Fundamentals	5	Semester 1	100		4BIO5 Biomechanics and 4BIO6 Biomaterials	
ME5BIO3	Tissue Engineering	5	Semester 1	75	25	MEU44BM6	Co-Requisite: ME5M20 (If MEU44BM6 has not been taken previously)
ME5BIO7	Advanced Medical Imaging	5	Semester 2	65	35	None	
MEP55BM8	Active Implanted Devices and Systems	10	Semester 2	100		3BIO1 Anatomy and Physiology, 4C5 Digital Signal Processing	
ME5MM3	Supply Chain Management	5	Semester 1		100	EM year 3,4; or visiting student equivalents	

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ME5MM7	Risk Management and Safety Assessment Systems	5	Semester 1		100	Recommended: Advanced Manufacturing modules, Supply Chain Management or equivalent from visiting institutions	
ME5MM1	Additive Manufacturing and Laser Processing	5	Semester 2	100			

For more information on module descriptors please click the module code

Please note that Modules relate to the 2022/23 Academic Year and are subject to change