Engineering											
Module Code	Module Title	ECTS Credits	Semester/ Duration	% Exam	% CA	Pre-requisite	Notes				
EEP55C22	Computational Methods	10	Full Year	0	100	None					
ME5E3	Innovation in Product Development	15	Full Year	TBD	TBD	None					
<u>MEP55B15</u>	Low Carbon Transport Technology	10	Full Year	0	100	None					
<u>MEP55B16</u>	Low Carbon Power Technology	10	Full Year	0	100	None					
<u>CE7C04</u>	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				
<u>CE7E07</u>	Sustainable Water Supply and Sanitation	5	Semester 1	70	30	None					
<u>CE7J02</u>	Solar Energy Conversion Applications	5	Semester 1	50	50	None					
<u>CE7J04</u>	Energy Policy and Demand	5	Semester 1	75	25	None					
<u>CE7S01</u>	Geotechnical Engineering	5	Semester 1	85	15	Students must have successfully completed an undergraduate module(s) in Soil Mechanics and (or) Geotechnical Engineering					
<u>CE7S02</u>	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.					

Engineering											
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<u>CE7S03</u>	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.					
<u>CE7T01</u>	Transportation Policy	5	Semester 1	50	50	None					
<u>CE7T02</u>	Transport Modelling and Planning	5	Semester 1	50	50	None					
<u>CEP55E03</u>	Air Pollution: Monitoring, Assessment & Control	5	Semester 1	TBD	TBD	None					
<u>CEU22E04</u>	Solids and Structures	5	Semester 1	85	15	1E7 Mechanics					
CEU22E07	Engineering and the Environment	5	Semester 1	70	30	None					
CEU22E09	Engineering design III: Project	5	Semester 1	0	100	None					
<u>CEU33A02</u>	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					
<u>CEU33A07</u>	Transportation and Highway Engineering	5	Semester 1	100	0	None					
CEU33A12	Civil Engineering Design Challenge	10	Semester 1	83	17	None					
<u>CEU44A04</u>	Hydraulics	5	Semester 1	75	25	None					
<u>CEU44A31</u>	Environmental Engineering	5	Semester 1	75	25	None					
<u>CEU44A51</u>	Geotechnical Engineering	5	Semester 1	80	20	CEU33A5					
<u>CEU44A61</u>	Structures 1	5	Semester 1	50	50	3A2 or similar introduction to structural design					
<u>CEU44E01</u>	Management for Engineers	5	Semester 1	50	50	None					
<u>CEU44E03</u>	Research Methods	5	Semester 1	0	100	None					
EE5C16	Deep Learning and its Applications	10	Semester 1	60	40	None					
<u>EE5M01</u>	Integrated Systems Design	5	Semester 1	70	30	EE3C7 or equivalent	EE5M01 & EEU44C01 must be taken together.				

Engineering											
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<u>EEMT21</u>	Introduction to XR: Applications and Technologies	5	Semester 1	0	100	None					
<u>EEP55C03</u>	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.)					
<u>EEP55C07</u>	Self-Organizing Systems	5	Semester 1	50	50	Mathematics (JS), Physics, Signal Processing (preferably JS), Basic knowledge of Linear Algebra and Probability and Statistics.					
EEP55C23	Computation for Transport Engineering	5	Semester 1	40	60	None					
EEPMMT07	Audio Engineering	5	Semester 1	0	100	None					
EEU22E06	Electronics	5	Semester 1	70	30	1E6 Electronics or equivalent					
EEU33C01	Signals and Systems	5	Semester 1	90	10	2E1 Engineering Mathematics III and 2E2 Engineering Mathematics IV					
<u>EEU44C01</u>	Integrated Systems Design	5	Semester 1	70	30	EE3C7 or equivalent	EE5M01 & EEU44C01 must be taken together.				
EEU44C01	Integrated Systems Design	5	Semester 1	70	30	EE3C7 or equivalent					
<u>EEU44C04</u>	Next Generation Networks	5	Semester 1	100	0	Prerequisite module: EEU3C05 Telecommunications. Other/alternative non-module prerequisites: General knowledge of networking protocols and transmission.					

Engineering											
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<u>EEU44C05</u>	Digital Signal Processing	5	Semester 1	100	0	3C1 Signals and Systems 3E3 Probability and Statistics 3E1 Engineering Mathematics V					
<u>EEU44C07</u>	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	None					
<u>EEU44E03</u>	Research Methods	5	Semester 1	40	60	None					
<u>ME5B09</u>	Control Engineering II	5	Semester 1	60	40	None					
<u>ME5E4</u>	Introduction to Computational Fluid Mechanics	5	Semester 1	30	70	Foundation courses in Numerical Methods (e.g. 2E11/3E2), Fluid Mechanics (e.g. 3B02, 4B13), and Heat Transfer (e.g. 4B04)					
ME5MM3	Supply Chain Management	5	Semester 1	0	100	EM year 3,4; or visiting student equivalents					
ME5MM7	Risk Management and Safety Assessment Systems	5	Semester 1	0	100	Recommended: Advanced Manufacturing modules, Supply Chain Management or equivalent from visiting institutions					
MEP56BM9	Medical Device Design Fundamentals	5	Semester 1	100	0	4BIO5 Biomechanics and 4BIO6 Biomaterials					
<u>MEU11E08</u>	Introduction to Professional Engineering	5	Semester 1	20	80	None					
<u>MEU11E12</u>	Engineering Materials and their Applications	10	Semester 1	50	50	None					

Engineering											
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<u>MEU11E14</u>	Experimental Methods and Data Centric Engineering	5	Semester 1	75	25	None					
MEU11EM1	Introduction to Manufacturing	5	Semester 1	60	40	None					
MEU22EM2	Strategic and Financial Management	5	Semester 1	40	60	None					
MEU22EM3	Design I	5	Semester 1	0	100	None					
<u>MEU23B10</u>	3D Computer Aided Design	5	Semester 1	0	100	None					
MEU33B02	Fluid Mechanics	5	Semester 1	85	15	MEU2205					
<u>MEU33B04</u>	Mechanical Engineering Materials	5	Semester 1	50	50	CEU22E08 Materials or MEU22M04 Materials or equivalent module					
<u>MEU33B10</u>	Universal Design Innovation	5	Semester 1	0	100	None					
<u>MEU44B04</u>	Heat Transfer	5	Semester 1	80	20	3B2 Fluid Mechanics or equivalent					
<u>MEU44B07</u>	Computer Aided Design	5	Semester 1	0	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)					
<u>MEU44B13</u>	Fluid Mechanics 2	5	Semester 1	60	40	3B2 Fluid Mechanics (or equivalent)					
<u>MEU44B17</u>	Multibody Dynamics	5	Semester 1	70	30	None					
MEU44BM4	Experimental and Research Methods	5	Semester 1	0	100	None					
MEU44BM5	Biomechanics	5	Semester 1	80	20	ME7B04 Basic Medical Sciences					
MEU44BM6	Biomaterials	5	Semester 1	80	20	None					

Engineering												
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<u>MEU44E03</u>	Engineering Research Methods	5	Semester 1	0	100	None						
MEU44EM3	Supply Chain Management	5	Semester 1	TBD	TBD	None						
MEU44EM9	User Centred Design Innovation	5	Semester 1	0	100	None						
<u>CE7E04</u>	Waste Management and Energy Recovery	5	Semester 2	70	30	Chemistry and environmental engineering background						
<u>CE7E05</u>	Water Quality and Hydrological Modelling	5	Semester 2	70	30	basic chemistry						
<u>CE7E06</u>	Water Resource Planning and Climate Change	5	Semester 2	80	20	No specific pre-requisite, but previous engineering hydrology module helpful						
<u>CE7J01</u>	Wind Energy	5	Semester 2	80	20	None						
<u>CE7J06</u>	Wave and Hydro Energy	5	Semester 2	80	20	None						
<u>CE7S04</u>	Bridge Engineering	5	Semester 2	0	100	None						
<u>CE7S05</u>	Advanced Concrete Technology	5	Semester 2	90	10	None						
<u>CE7S06</u>	Soil Structure Interaction -instead Offshore geotechnical engineering	5	Semester 2	80	20	CEU33A5, CEU44A51						
<u>CE7T04</u>	Transportation Data and Evaluation	5	Semester 2	75	25	Engineering or Sciences Primary Degree						
<u>CEU11E07</u>	Mechanics	5	Semester 2	90	10	None						
<u>CEU11E09</u>	Engineering Design I: Graphics and CAE	5	Semester 2	80	20	None						
<u>CEU33A04</u>	Structural Analysis	5	Semester 2	100	0	Ability to analyse statically determinate structures						
<u>CEU33A08</u>	Geology for Engineers	5	Semester 2	100	0	None						
<u>CEU33A10</u>	Surveying and Geo-spatial Planning	5	Semester 2	50	50	None						
CEU33A11	Fluids and Environment	5	Semester 2	60	40	None						

Engineering											
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<u>CEU44A01</u>	Civil Engineering Materials	5	Semester 2	80	20	basic chemistry and material science					
<u>CEU44A02</u>	Hydrogeology and Engineering Geology	5	Semester 2	100	0	None					
<u>CEU44A08</u>	Transportation	5	Semester 2	60	40	None					
<u>CEU44A62</u>	Structures 2: Advanced Design of Structures	5	Semester 2	85	15	None					
<u>EE5C01</u>	Motion Picture Engineering	10	Semester 2	0	100	An introduction to DSP and Image Processing would be useful					
EE5M02	Microelectronics	5	Semester 2	80	20	EEU33C03 or equivalent					
<u>EEMT17</u>	Spatial Audio	5	Semester 2	0	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.					
EEP55C24	Simulations for Geophysical Modelling	5	Semester 2	40	60	None					
EEP55C25	Algorithms for Quantum Computing	5	Semester 2	40	60	None					
EEP55M08	Image and Video Processing	5	Semester 2	75	25	EEU33C01 (Signals and Systems)					
EEU11E06	Electrical Engineering	5	Semester 2	85	15	Leaving Cert Honours Mathematics (or equivalent)					
EEU22E10	Engineering design IV: Project	10	Semester 2	0	100	None					

Engineering											
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<u>EEU22E12</u>	Computational Science and Engineering	5	Semester 2	65	35	Mathematics (JF), Physics, Basic knowledge of Linear Algebra (JF Level)					
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					
EEU33C05	Telecommunications	5	Semester 2	70	30	None					
EEU33C07	Digital Systems Design	5	Semester 2	50	50	EE1E6 or equivalent					
EEU33C08	Digital Circuits Design	5	Semester 2	0	100	Intermediate Multisim Proficiency					
EEU33C09	Analogue Circuit Design	5	Semester 2	100	0	EEU22E06 or equivalent	Module Co-requisite EEU33C03 (suggested)				
<u>EEU33E03</u>	Probability and Statistics	5	Semester 2	100	0	Engineering Mathematics (up to Year 2 incl.)					
<u>EEU44C02</u>	Microelectronic Circuits	5	Semester 2	80	20	EEU33C03 or equivalent					
EEU44C08	Digital Image and Video Processing	5	Semester 2	75	25	EEU33C01 (Signals and Systems)					
<u>EEU44C21</u>	Open Reconfigurable Networks	5	Semester 2	20	80	None					
<u>ME5B03</u>	Advanced Thermal Fluid Sciences	10	Semester 2	15	85	4B4 Heat Transfer, 4B13 Fluid Mechanics					
<u>ME5B10</u>	Instrumentation and Experimental Techniques	5	Semester 2	60	40	None					
ME5BIO3	Tissue Engineering	5	Semester 2	75	25	MEU44BM6	Co-Requisite: ME5M20 (If MEU44BM6 has not been taken previously)				
ME5BIO7	Advanced Medical Imaging	5	Semester 2	65	35	None					
ME5MM1	Additive Manufacturing and Laser Processing	5	Semester 2	100	0	None					

Engineering												
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MEP55BM8	Active Implanted Devices and Systems	10	Semester 2	100	0	3BIO1 Anatomy and Physiology, 4C5 Digital Signal Processing						
<u>MEU22E05</u>	Thermo-fluids	5	Semester 2	70	30	None						
<u>MEU33B01</u>	Thermodynamics	5	Semester 2	80	20	2E5 Thermo-fluids						
<u>MEU33B03</u>	Mechanics of Solids	5	Semester 2	90	10	1E7 Mechanics (or equivalent) and 2E4 Solids and Structures (or equivalent)						
<u>MEU33B05</u>	Mechanics of Machines	5	Semester 2	80	20	MEU11E07 Mechanics						
<u>MEU33B07</u>	Manufacturing Technology I	5	Semester 2	0	100	None						
<u>MEU33B07</u>	Manufacturing Technology and Systems	5	Semester 2	10	90	None						
<u>MEU44B01</u>	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						
<u>MEU44B05</u>	Manufacturing Technology	5	Semester 2	20	80	None						
<u>MEU44B06</u>	Manufacturing Systems and Project Management	5	Semester 2	0	100	None						
<u>MEU44B09</u>	Control Engineering	5	Semester 2	85	15	None						
<u>MEU44B10</u>	Turbomachinery	5	Semester 2	100	0	3B1 Thermodynamics, 3B2 Fluid Mechanics, 4B13 Fluid Mechanics						
MEU44B12	Introduction to Autonomous Mobile Robotics	5	Semester 2	30	70	None						
MEU44B14	Engineering Vibration and Noise	5	Semester 2	75	25	None						
	For more	informati	ion on module d	escripto	rs ple	ase click the module code						

Please note that Modules relate to the 2023/24 Academic Year and are subject to change