Sets Academic Year 2020-21

Conditions for candidates:

- candidates must offer 8 modules for examination;
- normally candidates may offer only one module from any set.
- in addition, candidates may take not more than three from the following: 4E modules; 4I1; 4M1–3; 4M23 and 4D16 (when running);
- no candidate who offered any module for Part IIA may again offer the same module for Part IIB.

Notes:

- there will be no Group R (research) modules available to Part IIB students in 2020-21;
- as we do not have exclusive control over imported modules we cannot guarantee that they will not clash with other sets;
- pre-requisites are listed below for new/revised modules only. For pre-existing modules the individual syllabus pages are the definitive source of information about pre-requisites. A summary is also given on the syllabus index page;

Candidates are advised to take note of the conditions of exemption which are set by the professional engineering institutions that accredit the course: http://teaching.eng.cam.ac.uk/content/accreditation-meng#coe.

- c = coursework only, p = exam only, p+c = coursework and exam.

Set	Unit	Title	Mode	Notes
Group A: Energy, Fluid Mechanics, and Turbomachinery				
IIBM1	4A2	Computational Fluid Dynamics	c	Pre-requisites: 3A1 and 3A3 assumed.
IIBM4	4A3	Turbomachinery I	p+c	Pre-requisites: 3A1 and 3A3 assumed.
IIBM6	4A4	Aircraft Stability and Control	c	
IIBM8	4A7	Aircraft Aerodynamics and Design	c	Pre-requisites: 3A1 and 3A3 assumed.
IIBM7	4A9	Molecular Thermodynamics	p	Pre-requisites: 3A1 and 3A5 useful.
IIBM11	4A12	Turbulence and Vortex Dynamics	p	Pre-requisites: 3A1 assumed; 3A3 useful.
IIBL5	4A13	Combustion and Engines	p	
IIBL11	4A15	Aeroacoustics	p	Pre-requisites: 3A1 useful.
Group B: Electrical Engineering				
IIBM6	4B2	Power Microelectronics	p	Pre-requisites: 3B3 and 3B5 useful.
IIBM11	4B5	Quantum and Nano-technologies	p	Pre-requisite: 3B5 assumed.
IIBM5	4B11	Photonic Systems	p	Pre-requisite: 3B6 useful.
IIBL1	4B13	Electronic Sensors and Instrumentation	p	Pre-requisite: 3B1 assumed.
IIBM2	4B19	Renewable Electrical Power	p	Pre-requisites: 3B3, 3B4, 3B6 assumed.
IIBL2	4B23	Optical Fibre Communication	p+c	Pre-requisites: 3B6 and 3F4 useful.
IIBL4	4B24	Radio Frequency Systems	p+c	Pre-requisite: 3B1 assumed.
IIBM7	4B25	Embedded Systems for the Internet of Things	c	Pre-requisite: 3B2 useful.
Group C: Mechanics, Materials, and Design				
IIBM3	4C2	Designing with Composites	p+c	
IIBM8	4C3	Advanced Functional Materials and Devices	p	Pre-requisite: 3B5 useful.
IIBM2	4C4	Design Methods	p	Shared with IIA.
IIBL4	4C5	Design Case Studies	c	Pre-requisites:4C4 useful.
IIBM4	4C6	Advanced Linear Vibrations	p+c	Pre-requisite: 3C6 assumed.
IIBM5	4C7	Random and Non-Linear Vibrations	p+c	Pre-requisite: 3C6 useful.
IIBL8	4C8	Vehicle Dynamics	p+c	Pre-requisite: 3C5 and 3C6 useful.
IIBL7	4C9	Continuum Mechanics	p	Pre-requisite: 3C7 assumed, 3D7 useful.
IIBL3	4C15	MEMS: Design	p+c	
Group D: Civil, Structural, and Environmental Engineering				
IIBL11	4D4	Construction Engineering	c	Pre-requisites: 3D1, 3D2, and 4D16 useful.
IIBM8	4D5	Foundation Engineering	p	Pre-requisite: 3D2 assumed.
IIBL2	4D6	Dynamics in Civil Engineering	p+c	Pre-requisites: 3D2, 3D4, and 3D7 useful.
IIBM4	4D7	Concrete and Prestressed Concrete	p+c	Pre-requisites: 2P8 and 3D3 assumed.
IIBL5	4D9	Offshore Geotechnical Engineering	p	Prerequisites: 3D2 assumed.
IIBM3	4D10	Structural Steelwork	p+c	Prerequisites: 3D4 assumed, 3D3 useful.
IIBM12	4D13	Architectural Engineering	c	Prerequisites: 3D3, 3D4 and 3D8 useful.
IIBM7	4D14	Contaminated Land & Waste Containment	p+c	Pre-requisite: 3D8 useful.
IIBL6	4D15	Management of Resilient Water Systems	c	

Group E: Management and Manufacturing				
IIBM9	4E1	Innovation and Strategic Management of Intellectual	c	
IIBM9	4E3	Business Innovation in a Digital Age	c	
IIBM9	4E4	Management of Technology	c	
IIBM9	4E6	Accounting and Finance	c	
IIBL12	4E11	Strategic Management	c	
IIBL9	4E12	Project Management	c	Part IIB Engineering students only.
Group F: Information Engineering				
IIBM5	4F1	Control System Design	p+c	Pre-requisites: 3F1 and 3F2 useful.
IIBL7	4F2	Robust and Nonlinear Control	c	Pre-requisites: 3F2 assumed.
IIBL11	4F3	An Optimisation Based Approach to Control	p	Pre-requisites: 3F1 and 3F2 useful.
IIBL6	4F5	Advanced Information Theory and Coding	p	Pre-requisites: 3F7 assumed. 3F1 and 3F4 useful.
IIBM4	4F7	Statistical Signal Analysis	p	Pre-requisites: 3F3 assumed. 3F1 and 3F8 useful.
IIBL3	4F8	Image Processing and Image Coding	p	Pre-requisites: 3F1 assumed. 3F3 and 3F7 useful.
IIBM6	4F10	Deep Learning and Structured data	p	Pre-requisites: 3F1, 3F3 and 3F8 useful.
IIBM2	4F12	Computer Vision	p	
IIBM1	4F13	Probabilistic Machine Learning	c	Pre-requisites: 3F3 useful.
IIBL5	4F14	Computer Systems	p+c	Pre-requisites: Part I Digital circuits and computing.
Group G: Bioengineering				
IIBL4	4G3	Computational Neuroscience	c	Pre-requisites: 3G2, 3G3 useful
IIBL2	4G4	Biomimetics	c	
IIBM6	4G5	Materials and Molecules: Modelling, Simulation and Machine Learning	c	

Group I: Imported modules

IIBCV	4I1	Strategic Valuation (TPE25)	c	Christmas vacation module. Cap=14. Borrowed from Technology Policy MPhil
IIBL8	4I8	Medical Physics	p	Borrowed from Physics. Pre-requisite: 3G4 useful.
IIBM5	4I10	Nuclear Reactor Engineering	p	Borrowed from Nuclear Energy MPhil. Pre-requisite: 4M16 assumed.
IIBL8	4I11	Advanced Fission and Fusion Systems	c	Borrowed from Nuclear Energy MPhil. Pre-requisite: 4M16 assumed.
IIBL6	4I14	Biosensors and Bioelectronics	c	Borrowed from Chemical Engineering and Biotechnology. Pre-requisite: 3G3 useful.
IIBL8	4I15	Mobile Robot Systems	c	Borrowed from Computer Laboratory.

Group M: Multidisciplinary modules				
IIBL10	4M1	French	c	
IIBL10	4M2	German	c	
IIBM10	4M3	Spanish	c	
IIBL1	4M12	Partial Differential Equations & Variational Methods	p	Shared with IIA.
IIBL1	4M16	Nuclear Power Engineering	p	Shared with IIA.
IIBM11	4M17	Practical Optimization	c	Pre-requisite: 3M1 assumed.
IIBM12	4M20	Robotics	c	Pre-requisites: 3C5, 3C8, 3F2 and 3F3 useful.
IIBL7	4M21	Software Engineering and Design	p	
IIBM11	4M22	Climate Change Mitigation	c	
IIBL6	4M23	Electricity and Environment (TPE22)	c	
IIBM2	4M24	Computational Statistics and Machine Learning	p+c	Pre-requisites: 3F3, 3F8 and 3M1 assumed.

Group S: Modules shared with Part IIA				
IIBM2	4C4	Design Methods	p	Shared with IIA.
IIBL1	4M12	Partial Differential Equations & Variational Methods	p	Shared with IIA.
IIBL1	4M16	Nuclear Power Engineering	p	Shared with IIA.

IIB Sets Michaelmas Term 2020				
IIBM1	4A2	Computational Fluid Dynamics	c	Pre-requisites: 3A1 and 3A3 assumed.
	4F13	Probabilistic Machine Learning	c	Pre-requisites: 3F3 useful.
IIBM2	4B19	Renewable Electrical Power	p	Pre-requisites: 3B3, 3B4, 3B6 assumed.
	4C4	Design Methods	p	Shared with IIA.
	4F12	Computer Vision	p	
	4M24	Computational Statistics and Machine Learning	p+c	
IIBM3	4C2	Designing with Composites	p+c	
	4D10	Structural Steelwork	p+c	Prerequisites: 3D4 assumed, 3D3 useful.
IIBM4	4A3	Turbomachinery I	p+c	Pre-requisites: 3A1 and 3A3 assumed.
	4C6	Advanced Linear Vibrations	p+c	Pre-requisite: 3C6 assumed.
	4D7	Concrete and Prestressed Concrete	p+c	Pre-requisites: 2P8 and 3D3 assumed.
	4F7	Statistical Signal Analysis	p	Pre-requisites: 3F3 assumed. 3F1 and 3F8 useful.
IIBM5	4B11	Photonic Systems	p	Pre-requisite: 3B6 useful.
	4C7	Random and Non-Linear Vibrations	p+c	Pre-requisite: 3C6 useful.
	4F1	Control System Design	p+c	Pre-requisites: 3F1 and 3F2 useful.
	4I10	Nuclear Reactor Engineering	p	Borrowed from Nuclear Energy MPhil. Pre-requisite: 4M16 assumed.
IIBM6	4A4	Aircraft Stability and Control	c	
	4B2	Power Microelectronics	p	Pre-requisites: 3B3 and 3B5 useful.
	4F10	Deep Learning and Structured data	p	Pre-requisites: 3F1, 3F3 and 3F8 useful.
	4G5	Materials and Molecules: Modelling, Simulation and Machine Learning		
IIBM7	4A9	Molecular Thermodynamics	p	Pre-requisites: 3A1 and 3A5 useful.
	4B25	Embedded Systems for the Internet of Things	c	Pre-requisite: 3B2 useful.
	4D14	Contaminated Land & Waste Containment	p+c	Pre-requisite: 3D8 useful.
IIBM8	4A7	Aircraft Aerodynamics and Design	c	Pre-requisites: 3A1 and 3A3 assumed.
	4C3	Advanced Functional Materials and Devices	p	Pre-requisite: 3B5 useful.
	4D5	Foundation Engineering	p	Pre-requisite: 3D2 assumed.
IIBM9	4E1	Innovation and Strategic Management of Intellectual	c	
	4E3	Business Innovation in a Digital Age	c	
	4E4	Management of Technology	c	
	4E6	Accounting and Finance	c	
IIBM10	4M3	Spanish	c	
IIBM11	4A12	Turbulence and Vortex Dynamics	p	Pre-requisites: 3A1 assumed; 3A3 useful.
	4M17	Practical Optimization	c	Pre-requisite: 3M1 assumed.
	4M22	Climate Change Mitigation	c	
	4B5	Quantum and Nano-technologies	p	Pre-requisite: 3B5 assumed.
IIBM12	4D13	Architectural Engineering	c	Prerequisites: 3D3, 3D4 and 3D8 useful.
	4M20	Robotics	c	Pre-requisites: 3C5, 3C8, 3F2 and 3F3 useful.

Christmas Vacation				
IIBCV	4I1	Strategic Valuation (TPE25)	c	Christmas vacation module. Cap=14. Borrowed from Technology Policy MPhil

IIB Sets Lent Term 2021

Set	Unit	Title	Mode	Notes
IIBL1	4B13	Electronic Sensors and Instrumentation	p	Pre-requisite: 3B1 assumed.
	4M12	Partial Differential Equations & Variational Methods	p	Shared with IIA.
	4M16	Nuclear Power Engineering	p	Shared with IIA.
IIBL2	4B23	Optical Fibre Communication	p+c	Pre-requisites: 3B6 and 3F4 useful.
	4D6	Dynamics in Civil Engineering	p+c	Pre-requisites: 3D2, 3D4, and 3D7 useful.
	4G4	Biomimetics	c	
IIBL3	4C15	MEMS: Design	p+c	
	4F8	Image Processing and Image Coding	p	Pre-requisites: 3F1 assumed. 3F3 and 3F7 useful.
IIBL4	4B24	Radio Frequency Systems	p+c	Pre-requisite: 3B1 assumed.
	4C5	Design Case Studies	c	Pre-requisites: 4C4 useful.
	4G3	Computational Neuroscience	c	Pre-requisites: 3G2, 3G3 useful
IIBL5	4A13	Combustion and Engines	p	
	4D9	Offshore Geotechnical Engineering	p	Prerequisites: 3D2 assumed.
	4F14	Computer Systems	p+c	Pre-requisites: Part I Digital circuits and computing.
IIBL6	4D15	Management of Resilient Water Systems	c	
	4F5	Advanced Information Theory and Coding	p	Pre-requisites: 3F7 assumed. 3F1 and 3F4 useful.
	4I14	Biosensors and Bioelectronics	c	Borrowed from Chemical Engineering and Biotechnology. Pre-requisite: 3G3 useful.
	4M23	Electricity and Environment (TPE22)	c	
IIBL7	4C9	Continuum Mechanics	p	Pre-requisite: 3C7 assumed, 3D7 useful.
	4F2	Robust and Nonlinear Control	c	Pre-requisites: 3F2 assumed.
	4M21	Software Engineering and Design	p	
IIBL8	4C8	Vehicle Dynamics	p+c	Pre-requisite: 3C5 and 3C6 useful.
	4I8	Medical Physics	p	Borrowed from Physics. Pre-requisite: 3G4
	4I11	Advanced Fission and Fusion Systems	c	Borrowed from Nuclear Energy MPhil. Pre-requisite: 4M16 assumed.
	4I15	Mobile Robot Systems	c	Borrowed from Computer Laboratory.
IIBL9	4E12	Project Management	c	Part IIB Engineering students only.
IIBL10	4M1	French	c	
	4M2	German	c	
IIBL11	4A15	Aeroacoustics	p	Pre-requisites: 3A1 useful.
	4D4	Construction Engineering	c	Pre-requisites: 3D1, 3D2, and 4D16 useful.
	4F3	An Optimisation Based Approach to Control	p	Pre-requisites: 3F1 and 3F2 useful.
IIBL12	4E11	Strategic Management	c	