

IIB Sets Academic Year 2022-23

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 2022-23;
- 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
Group A: Energy, Fluid Mechanics, and Turbomachinery			
IIBM1	4A2	Computational Fluid Dynamics	c
IIBM4	4A3	Turbomachinery I	p+c
IIBM6	4A4	Aircraft Stability and Control	c
IIBM8	4A7	Aircraft Aerodynamics and Design	c
IIBM7	4A9	Molecular Thermodynamics	p
IIBL4	4A10	Flow Instability	p
IIBL3	4A12	Turbulence and Vortex Dynamics	p
IIBL5	4A13	Combustion and Engines	p

Group B: Electrical Engineering			
IIBM6	4B2	Power Microelectronics	p
IIBM11	4B5	Quantum and Nano-technologies	p
IIBM5	4B11	Photonic Systems	p
IIBL1	4B13	Electronic Sensors and Instrumentation	p
IIBL2	4B23	Optical Fibre Communication	p+c
IIBL4	4B24	Radio Frequency Systems	p+c
IIBL7	4B25	Embedded Systems for the Internet of Things	c
IIBL8	4B27	Internet of everything	c

Group C: Mechanics, Materials, and Design			
IIBM3	4C2	Designing with Composites	p+c
IIBM8	4C3	Advanced Functional Materials and Devices	p

IIBM2	4C4	Design Methods	p
IIBL4	4C5	Design Case Studies	c
IIBM4	4C6	Advanced Linear Vibrations	p+c
IIBM5	4C7	Random and Non-Linear Vibrations	p+c
IIBL8	4C8	Vehicle Dynamics	p+c
IIBL7	4C9	Continuum Mechanics	p
IIBL3	4C15	MEMS: Design	p+c

Group D: Civil, Structural, and Environmental Engineering

IIBL3	4D2	Advanced Structural Design	c
IIBM8	4D5	Deep Foundations and Underground Construction	p
IIBL2	4D6	Dynamics in Civil Engineering	p+c
IIBM4	4D7	Concrete and Prestressed Concrete	p+c
IIBL5	4D9	Offshore Geotechnical Engineering	p
IIBM3	4D10	Structural Steelwork	p+c
IIBM12	4D13	Architectural Engineering	c
IIBM7	4D14	Contaminated Land and Waste Containment	p+c
IIBM2	4D16	Construction Management	p

Group E: Management and Manufacturing

IIBM9	4E1	Innovation and Strategic Management of Intellectual Property	c
IIBM9	4E3	Business Innovation in a Digital Age	c
IIBM9	4E4	Management of Technology	c
IIBL9	4E5	International Business	c
IIBM9	4E6	Accounting and Finance	c
IIBL12	4E11	Strategic Management	c
IIBL9	4E12	Project Management	c

Group F: Information Engineering

IIBM5	4F1	Control System Design	p+c
IIBL7	4F2	Robust and Nonlinear Control	c
IIBL11	4F3	An Optimisation Based Approach to Control	p
IIBL6	4F5	Advanced Information Theory and Coding	p
IIBM3	4F7	Statistical Signal Analysis	p
IIBL2	4F8	Image Processing and Image Coding	p
IIBM6	4F10	Deep Learning and Structured data	p
IIBM2	4F12	Computer Vision	p
IIBM1	4F13	Probabilistic Machine Learning	c
IIBL5	4F14	Computer Systems	p+c

Group G: Bioengineering

IIBM7	4G1	Mathematical Biology of the Cell	c
IIBL4	4G3	Computational Neuroscience	c
IIBL2	4G4	Biomimetics	c
IIBL5	4G6	Cellular and Molecular Biomechanics	p
IIBM4	4G7	Control and Computation in Living Systems	p
IIBL11	4G9	Biomedical Engineering	c

Group I: Imported modules			
IIBCV	4I1	Strategic Valuation (TPE25)	c
IIBL8	4I8	Medical Physics	p
IIBM5	4I10	Nuclear Reactor Engineering	p
IIBL8	4I11	Advanced Fission and Fusion Systems	c
IIBM3	4I14	Biosensors and Bioelectronics	c

Group M: Multidisciplinary modules			
IIBL10	4M1	French	c
IIBL10	4M2	German	c
IIBM10	4M3	Spanish	c
IIBL1	4M12	Partial Differential Equations & Variational Methods	p
IIBL1	4M16	Nuclear Power Engineering	p
IIBM11	4M17	Practical Optimization	c
IIBM1	4M19	Advanced Building Physics	c
IIBM12	4M20	Introduction to Robotics	c
IIBL7	4M21	Software Engineering and Design	p
IIBM11	4M22	Climate Change Mitigation	c
IIBL6	4M23	Electricity and Environment (TPE22)	c
IIBM8	4M24	Computational Statistics and Machine Learning	p+c
IIBL3	4M25	Advanced Robotics	c
IIBL3	4M26	Algorithms and Data Structures	p
IIBM10	4M28	Chinese for Heritage and Advanced Speakers	c

Group S: Modules shared with Part IIA			
IIBM2	4C4	Design Methods	p
IIBL1	4M12	Partial Differential Equations & Variational Methods	p
IIBL1	4M16	Nuclear Power Engineering	p
IIBM2	4D16	Construction Management	p

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IIBM1	4A2	Computational Fluid Dynamics	c
	4F13	Probabilistic Machine Learning	c
	4M19	Advanced Building Physics	c

IIBM2	4C4	Design Methods	p
	4D16	Construction Management	p
	4F12	Computer Vision	p

IIBM3	4C2	Designing with Composites	p+c
	4D10	Structural Steelwork	p+c
	4F7	Statistical Signal Analysis	p
	4I14	Biosensors and Bioelectronics	c

IIBM4	4A3	Turbomachinery I	p+c
	4C6	Advanced Linear Vibrations	p+c
	4D7	Concrete and Prestressed Concrete	p+c
	4G7	Control and Computation in Living Systems	p

IIBM5	4B11	Photonic Systems	p
	4C7	Random and Non-Linear Vibrations	p+c
	4F1	Control System Design	p+c
	4I10	Nuclear Reactor Engineering	p

IIBM6	4A4	Aircraft Stability and Control	c
	4B2	Power Microelectronics	p
	4F10	Deep Learning and Structured data	p

IIBM7	4A9	Molecular Thermodynamics	p
	4D14	Contaminated Land and Waste Containment	p+c
	4G1	Mathematical Biology of the Cell	c

IIBM8	4A7	Aircraft Aerodynamics and Design	c
	4C3	Advanced Functional Materials and Devices	p
	4D5	Deep Foundations and Underground Construction	p
	4M24	Computational Statistics and Machine Learning	p+c

IIBM9	4E1	Innovation and Strategic Management of Intellectual Property	c
	4E3	Business Innovation in a Digital Age	c
	4E4	Management of Technology	c
	4E6	Accounting and Finance	c

IIBM10	4M3	Spanish	c
	4M28	Chinese for Heritage and Advanced Speakers	c

IIBM11	4B5	Quantum and Nano technologies	p
	4M17	Practical Optimization	c
	4M22	Climate Change Mitigation	c

IIBM12	4D13	Architectural Engineering	c
	4M20	Introduction to Robotics	c

Christmas Vacation			
IIBCV	4I1	Strategic Valuation (TPE25)	c

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IIBL1	4B13	Electronic Sensors and Instrumentation	p
	4M12	Partial Differential Equations & Variational Methods	p
	4M16	Nuclear Power Engineering	p

IIBL2	4D6	Dynamics in Civil Engineering	p+c
	4F8	Image Processing and Image Coding	p+c
	4G4	Biomimetics	c
	4B23	Optical Fibre Communication	p+c

IIBL3	4A12	Turbulence and Vortex Dynamics	p
	4C15	MEMS: Design	p+c
	4D2	Advanced Structural Design	c
	4M25	Advanced Robotics	c
	4M26	Algorithms and Data Structures	p

IIBL4	4A10	Flow Instability	p+c
	4B24	Radio Frequency Systems	p+c
	4C5	Design Case Studies	c
	4G3	Computational Neuroscience	c

IIBL5	4A13	Combustion and Engines	p
	4D9	Offshore Geotechnical Engineering	p
	4F14	Computer Systems	p+c
	4G6	Cellular and Molecular Biomechanics	p

IIBL6	4F5	Advanced Information Theory and Coding	p
	4M23	Electricity and Environment (TPE22)	c

IIBL7	4B25	Embedded Systems for the Internet of Things	c
	4C9	Continuum Mechanics	p
	4F2	Robust and Nonlinear Control	c
	4M21	Software Engineering and Design	p

IIBL8	4C8	Vehicle Dynamics	p+c
	4I8	Medical Physics	p
	4B27	Internet of everything	
	4I11	Advanced Fission and Fusion Systems	c

IIBL9	4E5	International Business	c
	4E12	Project Management	c

IIBL10	4M1	French	c
	4M2	German	c

IIBL11	4F3	An Optimisation Based Approach to Control	p
	4G9	Biomedical Engineering	c

IIBL12	4E11	Strategic Management	c
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