

Part IIB syllabuses; links to online resources

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Note that all modules are assessed by 100% Coursework, or 100% Examination, or 75% Examination and 25% Coursework. In all cases, the definitive form of assessment is given in the Faculty Board's [Modules & Sets](#) document. The Faculty Board will publish an outline of the coursework requirements for Part IIB 100% coursework modules (being updated, link to follow) but you should see the module syllabus pages for further details.

[Interactive booklists for Part IIB are available on Moodle.](#)

[Engineering Areas](#)

[Course material on Moodle](#)

[Group A: Energy, Fluid Mechanics and Turbomachinery](#)

Module		Term (set)	Form of assessment	Prerequisites		On-line resources	Leader
Cod e	Title (linked to syllabus)			Assumed	Useful		
4A2	Computational fluid dynamics	M(1)	Coursework	3A1, 3A3		Moodle	Dr J. Taylor
4A3	Turbomachinery I	M(4)	Exam and coursework	3A1, 3A3		Moodle	Prof R.J. Miller
4A4	Aircraft stability and control	M(6)	Coursework			Moodle	Dr W. Graham
4A7	Aircraft aerodynamics and design	M(8)	Coursework	3A1, 3A3		Moodle	Dr J. Jarrett
4A9	Molecular thermodynamics	M(7)	Exam		3A1, 3A5	Moodle	Dr A. J. White
4A10	Flow instability	L(4)	Exam	3A1		Moodle	Prof. G. Hunt
4A12	Turbulence and vortex dynamics	L(3)	Exam	3A1	3A3	Moodle	Dr J Li
4A13	Combustion and engines	L(5)	Exam		3A5, 3A6	Moodle	Prof E Mastorakos
4A15	Acoustics	L(11)	Exam			Moodle	Dr A Agarwal

[Group B: Electrical Engineering](#)

Module		Term (set)	Form of assessment	Prerequisites		On-line resources	Leader
Cod e	Title (linked to syllabus)			Assumed	Useful		
4B2	Power microelectronics	M(6)	Exam		3B3, 3B5	Moodle	Prof F. Udrea
4B5	Quantum and Nano-technologies	M(1)	Exam	3B5		Moodle	Dr L. Sapienza

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Module		Term (set)	Form of assessment	Prerequisites		On-line resources	Leader
Cod e	Title (linked to syllabus)			Assumed	Useful		
4B1 1	Photonic systems	M(5)	Exam		3B6	Moodle	Prof T. Wilkinson
4B1 3	Electronic sensors and instrumentation	L(1)	Exam	3B1		Moodle	
4B1 9	Renewable electrical power	M(2)	Exam	3B3, 3B4, 3B6		Moodle	Dr T J Flack
4B2 3	Optical Fibre Communication	L(2)	Exam and coursework		3F4, 3B6	Moodle	Prof S J Savory
4B2 4	Radio frequency systems	L(4)	Exam and coursework	3B1		Moodle	Dr M J Crisp
4B2 5	Embedded systems for the internet of things	L(7)	Coursework		3B2	Moodle	Dr P Stanley-Marbell
4B2 7	Internet of everything	L(8)	Coursework			Moodle	Dr O. Akan

[Group C: Mechanics, Materials and Design](#)

Module		Term (set)	Form of assessment	Prerequisites		On-line resources	Leader
Cod e	Title (linked to syllabus)			Assumed	Useful		
4C2	Designing with composites	M(3)	Exam and Coursework			Moodle	Dr A Markaki
4C3	Advanced Functional Materials and Devices	M(8)	Exam		3B5	Moodle	Prof J H Durrell
4C4	Design methods	M(2)	Exam			Moodle	Prof J. Cullen
4C5	Design case studies	L(4)	Coursework		4C4	Moodle	Prof N. Crilly
4C6	Advanced linear vibrations	M(4)	Exam and Coursework	3C6		Moodle	Dr JP Talbot
4C7	Random and non-linear vibrations	M(5)	Exam and Coursework		3C6	Moodle	Prof. AA Seshia
4C8	Vehicle Dynamics	L(8)	Exam and Coursework		3C5, 3C6	Moodle	Prof D Cebon
4C9	Continuum mechanics	L(7)	Exam	3C7	3D7	Moodle	Dr G McShane
4C1 1	Data-driven and learning based methods in mechanics and materials	L(2)	Coursework	3C7	3D7	Moodle	Dr B Liu

[Group D: Civil Engineering](#)

Module		Term (set)	Form of assessment	Prerequisites		On-line resources	Leader					
Cod e	Title (linked to syllabus)			Assumed	Useful							
4D2	Advanced structural design	L(3)	Coursework	3D3, 3D4		Moodle	Dr R. Foster					
4D4	Construction engineering	L(11))	Coursework		3D1, 3D2, 4D16	Moodle	Dr B. Sheil					
4D5	Deep Foundations and Underground Construction					M(8)	Exam	3D2				Moodle
4D6	Dynamics in civil engineering					L(2)	Exam and Coursework			3D2, 3D4, 3D7		Moodle
4D7	Concrete and Prestressed concrete					M(4)	Exam and Coursework	2P8, 3D3				Moodle

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Cod e	Title (linked to syllabus)			Assumed	Useful						
4D9	Offshore Geotechnical Engineering					L(5)	Exam	3D2			Moodle
4D10	Structural steelwork					M(3)	Exam and Coursework	3D4		3D3	Moodle
4D13	Architectural engineering					M(1 2)	Coursework			3D3, 3D4, 3D8	Moodle
4D16	Construction management					M(2)	Exam				Moodle

Group E: Management and Manufacturing

Module		Term (set)	Form of assessment	Prerequisites		On-line resources	Leader
Cod e	Title (linked to syllabus)			Assumed	Useful		
4E1	Innovation and strategic management of intellectual property	M(9)	Coursework			Moodle	Dr F Tietze
4E3	Business innovation in a digital age	M(9)	Coursework			Moodle	Dr K Sayegh
4E5	International Business	L(9)	Coursework			Moodle	Dr S. Welch
4E6	Accounting and finance	M(9)	Exam			Moodle	Dr O. Cole
4E1 1	Strategic management	L(12)	Coursework			Moodle	Prof S Ansari
4E1 2	Project management	L(9)	Coursework			Moodle	Dr N. Oraopoulos

Group F: Information Engineering

Module		Term (set)	Form of assessment	Prerequisites		On-line resources	Leader
Cod e	Title (linked to syllabus)			Assumed	Useful		
4F1	Control system design	M(5)	Exam and Coursework		3F1, 3F2	Moodle	Prof M Smith
4F2	Robust and nonlinear control	L(7)	Coursework	3F2		Moodle	Prof. F. Forni
4F3	An optimisation based approach to control	L(11)	Exam		3F1, 3F2	Moodle	Prof G Vinnicombe
4F5	Advanced information theory and coding	L(6)	Exam	3F7	3F1, 3F4	Moodle	Prof A Guillen i Fabregas
4F8	Image processing and image coding	L(2)	Exam	3F1	3F3, 3F7	Moodle	Prof J Lasenby
4F1 0	Deep learning and structured data	M(6)	Exam		3F1, 3F3, 3F8	Moodle	Prof M.J.F. Gales
4F1 2	Computer vision	M(2)	Exam			Moodle	Prof R. Cipolla
4F1 3	Probabilistic Machine Learning	M(1)	Coursework		3F3	Machine learning lecture notes Moodle	Prof C Rasmussen
4F1 4	Computer Systems	L(5)	Exam and Coursework	Part I Digital circuits and comp		Moodle	Prof A H Gee

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Module		Term (set)	Form of assessment	Prerequisites		On-line resources	Leader
Cod e	Title (linked to syllabus)			Assumed	Useful		
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Group G: Bioengineering

Module		Term (set)	Form of assessment	Prerequisites		On-line resources	Leader
Cod e	Title (linked to syllabus)			Assumed	Useful		
4G1	Mathematical biology of the cell	M(7)	Coursework			Moodle	Dr T. Savin
4G3	Computational neuroscience	L(4)	Coursework		3G2, 3G3	Moodle	Prof M. Lengyel
4G5	Materials and molecules: modelling, simulation and machine learning	L(8)	Coursework			Moodle	Prof G. Csanyi
4G6	Cellular and molecular biomechanics	L(5)	Exam		3C7	Moodle	Prof V. Deshpande
4G7	Control and Computation in Living Systems	M(4)	Exam and Coursework		3G1, 3G2, 3G3, 3F0	Moodle	Dr T. O'Leary
4G9	Biomedical engineering	L(11)	Coursework			Moodle	Dr T. Bashford
4G10	Brain Machine Interfaces	M(6)	Coursework		3M1, 3G3, 3F2, 3F8	Moodle	Dr Y Ahmadian

Group I: Imported Modules

Note that these modules are all imported from other courses, and hence might be timetabled at unusual times and in unusual places, and have a different course structure to other IIB modules. Also, many of them have a cap on numbers. However, they do provide a tremendous opportunity to learn about a wider range of technology than the Engineering Tripos would otherwise provide.

Module		Term (set)	Form of assessment	Prerequisites		On-line resources	Leader
Cod e	Title (linked to syllabus)			Assumed	Useful		
4I1	Strategic valuation	M(vac)	Coursework			Moodle	Dr H Jiang
4I8	Medical physics	L(8)	Exam		3G4	Moodle	Dr G Bale
4I10	Nuclear reactor engineering	M(5)	Exam	4M16		Moodle	Dr E Shwagerl
4I11	Advanced fission and fusion systems	L(8)	Coursework	4M16		Moodle	Dr E Shwagerl
4I14	Biosensors and Bioelectronics	M(3)	Coursework		3G3	Moodle	Prof G Malliaras

Group M: Multidisciplinary Modules

Module		Term (set)	Form of assessment	Prerequisites		On-line resources	Leader
Cod e	Title (linked to syllabus)			Assumed	Useful		
4M1	French	L(10)	Coursework			Moodle	Mr D. Tual
4M3	Spanish	M(10)	Coursework			Moodle	Mr S. Bianchi
4M12	Partial differential equations and variational methods	L(1)	Exam			Moodle	Prof J.S. Biggins

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Cod e	Title (linked to syllabus)			Assumed	Useful				
4M1 6	Nuclear power engineering	L(1)	Exam			Moodle	Dr G.T. Parks		
4M1 7	Practical optimization	M(1 1)	Coursework	3M1		Moodle	Dr G.T. Parks		
4M1 9	Advanced building physics	M(1)	Coursework	3D8		Moodle	Prof G.R. Hunt		
4M2 1	Software engineering and design	L(7)	Exam			Moodle	Dr E Punskeya		
4M2 2	Climate change mitigation	M(1 1)	Coursework			Moodle	Prof J.M. Allwood		
4M2 3	Electricity and environment	L(6)	Coursework			Moodle			Prof M Pollitt
4M2 4	Computational statistics and machine learning	M(8)	Exam and coursework	3F3, 3F8, 3M1		Moodle			Prof M Girola
4M2 6	Algorithms and data structures	L(3)	Exam			Moodle			

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