

## Lectures Proposed by the Board of the Faculty of Engineering

For particulars of the University Composition Fee and of the fees payable at separate courses of lectures, see p. 2.

### ENGINEERING TRIPOS

MICHAELMAS 2010

LENT 2011

EASTER 2011

#### PART IA

#### First year: for students intending to take Part IA in 2011

The lecture rooms are indicated as follows: *LT0* Lecture theatre 0; *LT1* Lecture theatre 1; *LT2* Lecture theatre 2; *LR3* Lecture room 3; *LR4* Lecture room 4; *LR6* Lecture room 6; *LR10* Lecture room 10.

A detailed timetable will be displayed in the Department. Further details are also available on the Web at <http://www.eng.cam.ac.uk/teaching/>

##### **Paper 1 (Mechanical Engineering)**

DR H. E. M. HUNT *LT0*  
Mechanics (Sixteen lectures)

##### **Paper 2 (Structural Mechanics and Materials)**

DR M. DE JONG *LT0*  
Structural Mechanics (Twelve lectures)

##### **Paper 3 (Electrical and Information Engineering)**

DR C. DURKAN ET AL  
Linear Circuits and Devices (Sixteen lectures)

##### **Paper 4 (Mathematics)**

DR J. P. LONGLEY (Twelve lectures)  
DR G. WELLS *LT2* (Twelve lectures)  
PROF. P. A. DAVIDSON AND DR M. P. JUNIPER *LT1* (Sixteen lectures)  
DR G. CSANYI  
Computing (Four lectures)  
DR G. T. PARKS *LT0*  
Dimensional Analysis (Four lectures)  
DR P. J. CLARKSON AND OTHERS *LT0*  
Design of Products (One lecture)  
DR T. MINSHALL AND OTHERS *LT0*  
Engineer in Society (Eight lectures)  
DR R. S. CANT AND OTHERS  
Laboratory

PROF. R. S. LANGLEY *LT0*  
Mechanical Vibrations (Four lectures)  
PROF. N. COLLINGS/PROF. H. BABINSKY *LT0*  
Thermofluid Mechanics (Sixteen lectures)

DR J. LEES *LT0*  
Structural Mechanics (Twelve lectures)  
DR H. R. SHERCLIFF *LT0*  
Materials (Twelve lectures)

DR F. UDREA *LT0*  
The same continued. (Four lectures)  
DR C. DURKAN *LT0*  
The same continued. (Eight lectures)  
PROF. R. V. PENTY *LT0*  
Digital Circuits (Four lectures)

DR T. D. WILKINSON  
Electromagnetics (Six lectures)  
PROF. R. W. PRAGER *LT0* (Nine lectures)  
DR G. CSANYI *LT0*  
Computing (Four lectures)  
PROF. P. J. CLARKSON AND OTHERS *LT0*  
Design of Products (Eight lectures)

The same continued. Laboratory Signing (to be arranged)

The same continued. (Eight lectures)  
DR A. WHITE  
The same continued. (Eight lectures)

PROF. N. A. FLECK ET AL *LT0*  
The same continued. (Eight lectures)

The same continued. (Twelve lectures)

PROF. M. SMITH *LT0* (Seven lectures)

The same continued.

**Faculty of Engineering (continued)**  
**ENGINEERING TRIPOS, PART IB**

MICHAELMAS 2010

LENT 2011

EASTER 2011

**Second year: for students intending to take Part IB in 2011**

A detailed timetable will be displayed in the Department. Further details are also available on the Web at  
<http://www.eng.cam.ac.uk/teaching/>

**Paper 1 (Mechanics)****Paper 2 (Structures)**

DR S. D. GUEST *LTO*  
Structures (Eight lectures)

**Paper 3 (Materials)**

MR G. MCSHANE AND DR M. P. F. SUTCLIFFE *LTO*  
Materials (Sixteen lectures)

**Paper 4 (Thermofluid Mechanics)**

DR R. MILLER *LTO* (Six lectures)  
DR M. JUNIPER Thermofluid Mechanics (Ten lectures)

**Paper 5 (Electrical Engineering)**

DR R. A. MCMAHON *LTO*  
Linear Circuits and Devices (Ten lectures)

**Paper 6 (Information Engineering)**

DR G. VINNICOMBE *LTO*  
Linear Systems (Fourteen lectures)

**Paper 7 (Mathematical Methods)**

PROF. J. WOODHOUSE *LTO*  
Vector Calculus (Fourteen lectures)

**Paper 8 (Selected topics)**

DR M. KITSON  
Introductory Business Economics (Eight lectures)

TBA  
Example Classes (Eight classes)  
Laboratory (to be arranged)  
Engineering Applications (TBA)

DR D. CEBON *LTO*  
Dynamics (Sixteen lectures)

The same continued.  
DR S. D. GUEST (Twelve lectures) *LTO*

DR S. A. SCOTT AND DR R. J. MILLER  
The same continued. (Ten lectures)

DR T. A. COOMBS *LTO*  
Electrical Power (Ten lectures)  
DR A. FERRARI *LTO*  
E. M. Fields and Waves (Six lectures)

DR A. GUILLEN I FABREGAS *LTO*  
Communications (Seven lectures)  
PROF. S. J. GODSILL  
Signal and Data Analysis/Fourier transforms  
(Seven lectures)

DR C. RASMUSSEN *LTO*  
Probability (Six lectures)  
DR T. P. HYNES *LTO*  
Linear Algebra (Eight lectures)

**(All fourteen lectures and two examples classes)***All lectures in LT1/LT2*

PROF. R. J. MAIR AND DR C. J. BURGOYNE  
Civil and Structural Engineering  
DR M. P. F. SUTCLIFFE AND DR D. D. SYMONS  
Mechanics, Materials and Design  
PROF. R. CIPOLLA, DR J. LASENBY AND PROF. Z.  
GHAHRAMANI  
Information Engineering  
PROF. J. ROBERTSON AND PROF. W. I. MILNE  
Electrical Engineering  
DR G. PULLAN AND DR C. A. HALL  
Aerothermal Engineering  
PROF. D. M. WOLPERT ET AL  
Biomedical Engineering  
DR T. H. W. MINSHALL  
Manufacturing and Management  
DR M. KITSON  
Introductory Business Economics

The same continued.  
The same continued.  
The same continued.

**Faculty of Engineering (continued)**

All lectures will be held in the *Engineering Department* unless otherwise stated.  
A detailed timetable will be displayed in the department.

**ENGINEERING TRIPOS, PART IIA**

MICHAELMAS 2010

LENT 2011

EASTER 2011

**3A1: Fluid mechanics I**  
Leader Dr T. P. Hynes

**3A3: Fluid mechanics II**  
Leader Prof. R. S. Cant

**3A5: Thermodynamics and power generation**  
Leader Prof. J. B. Young

**3B1: Radio frequency electronics**  
Leader Dr P. A. Robertson

**3B3: Switch-mode electronics**  
Leader Dr P. R. Palmer

**3B5: Semiconductor engineering**  
Leader Prof. P. Migliorato

**3C1: Materials processing and design**  
Leaders Dr H. R. Shercliff and Prof. I. M. Hutchings

**3C5: Dynamics**  
Leader Dr H. E. M. Hunt

**3C7: Mechanics of solids**  
Leader Dr S. D. Guest

**3C8: Machine design**  
Leader Dr D. J. Cole

**3D1: Geotechnical engineering I**  
Leader Prof. M. D. Bolton

**3D3: Structural materials and design**  
Leader Dr M. Overend

**3E1: Business economics**  
Leader Dr M. Kitson

**3E3: Modelling risk**  
Leader Dr N. Oridopoulos

**3F1: Signals and systems**  
Leader Prof. N. G. Kingsbury

**3F5: Computer and network systems**  
Leader Dr A. H. Gee

**3I1: Data structures and algorithms (CST)**  
Leader Dr A. Norman

**3G1: Introduction to bioscience**  
Leader Dr G. Micklem

**3G4: Medical imaging and 3-D computer graphics**  
Leader Dr A. H. Gee

**4C4: Design methods**  
Leader Prof. P. J. Clarkson

**4D16: Construction and Management**  
Leader Dr A. Al-Tabbaa

**4M13: Complex analysis and optimization**  
Leader Dr G. T. Parks

*For all students:*

Laboratory/coursework W. F. 11-1, 2.15-4.15

The same continued.

The same continued.

**3A6: Heat and mass transfer**  
Leader Prof. S. Hochgreb

**3B2: Integrated digital electronics**  
Leader Prof. F. Udrea

**3B4: Electric drive systems**  
Leader Dr P. R. Palmer

**3B6: Photonic technology**  
Leader Prof. I. H. White

**3C6: Vibration**  
Leader Prof. D. Cebon

**3C9: Fracture mechanics of materials and structures**  
Leader Prof. N. A. Fleck

**3D2: Geotechnical engineering II**  
Leader Prof. K. Soga

**3D4: Structural analysis and stability**  
Leader Mr F. A. McRobie

**3D5: Water engineering**  
Leader Dr D. F. Liang

**3D6: Environmental geotechnics**  
Leader Dr A. Al-Tabbaa

**3D7: Finite element methods**  
Leader Dr G. Wells

**3E2: Marketing**  
Leader Dr V. Mak

**3E5: Human resource management**  
Leader Dr J. Menges

**3E6: Organisational behaviour and change**  
Leader Dr J. Menges

**3E10: Operations management for engineers**  
Leader Dr M. Holweg

**3F2: Systems and control**  
Leader Prof. J. M. Maciejowski

**3F3: Signal and pattern processing**  
Leader Dr S. Godsill

**3F4: Data transmission**  
Leader Dr I. Wassell

**3F6: Software engineering and design**  
Leader Mr J. Matheson

**3G2: Mathematical physiology**  
Leader Dr A. Kabla

**3G3: Introduction to neuroscience**  
Leader Dr M. Lengyel

**3G5: Biomaterials**  
Leader Dr M. L. Oyen

**4M12: Partial differential equations and variational methods**  
Leader Dr G. Wells

**4M16: Nuclear power engineering**  
Leader Dr G. T. Parks

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**Faculty of Engineering (continued)**  
**ENGINEERING TRIPOS, PART IIB**

MICHAELMAS 2010

LENT 2011

EASTER 2011

**GROUP A: Energy, Fluid Mechanics and Turbomachinery**

**4A2** (Computational fluid mechanics)  
 PROF. W. N. DAWES (Leader)

**4A3** (Turbomachinery I)  
 DR C. A. HALL (Leader)

**4A8** (Environmental fluid mechanics)  
 PROF. N. MASTORAKOS (Leader)

**4A12** (Turbulence and vortex dynamics)  
 PROF. P. A. DAVIDSON (Leader)

**4A13** (Combustion and IC engines)  
 PROF. S. HOCHGREB (Leader)

**GROUP B: Electrical Engineering**

**4B2** (Power microelectronics)  
 DR F. UDREA (Leader)

**4B5** (Nanotechnology)  
 DR C. DURKAN (Leader)

**4B11** (Photonic systems)  
 DR T. D. WILKINSON (Leader)

**4B14** (Solar-electronic power: generation and distribution)  
 PROF. G. AMARATUNGA (Leader)

**4B19** (Renewable electric power)  
 DR T. J. FLACK (Leader)

**GROUP C: Mechanics, Materials and Design**

**4C2** (Designing with composites)  
 DR M. P. F. SUTCLIFFE (Leader)

**4C3** (Electrical and nano materials)  
 PROF. D. A. CARDWELL (Leader)

**4C4** (Design methods)  
 PROF. P. J. CLARKSON (Leader)

**4C6** (Advanced linear vibrations)  
 PROF. J. WOODHOUSE (Leader)

**4C7** (Random and non-linear vibrations)  
 PROF. R. S. LANGLEY (Leader)

**4C9** (Continuum mechanics)  
 DR V. DESHPANDE (Leader)

**GROUP D: Civil, Structural and Environmental Engineering**

**4D7** (Concrete and masonry structures)  
 DR J. LEES (Leader)

**4D10** (Structural steelwork)  
 MR F. A. MCROBIE (Leader)

**4D11** (Building physics)  
 DR M. OVEREND (Leader)

**4D13** (Architectural engineering)  
 DR R. CHOUDHARDY (Leader)

**4D16** (Construction and management)  
 DR A. AL-TABBAA (Leader)

**4A7** (Aerodynamics)  
 DR J. JARRETT (Leader)

**4A10** (Flow instability)  
 DR M. P. JUNIPER (Leader)

**4A11** (Turbomachinery II)  
 DR L. XU (Leader)

**4B6** (Solid state devices and chemical/biological sensors)  
 PROF. P. MIGLIORATO (Leader)

**4B7** (VLSI design, technology and CAD)  
 DR D. M. HOLBURN (Leader)

**4B13** (Electronic sensors and instrumentation)  
 DR P. A. ROBERTSON (Leader)

**4B15** (Advanced telecommunications networks)  
 DR T. WILKINSON (Leader)

**4B18** (Advanced electronic devices)  
 PROF. M. J. KELLY (Leader)

**4C5** (Design case studies)  
 DR N. CRILLY (Leader)

**4C8** (Applications of dynamics)  
 PROF. D. CEBON (Leader)

**4C15** (MEMS: design)  
 DR A. SESHIA (Leader)

**4C16** (Advanced machine design)  
 DR D. COLE (Leader)

**4D4** (Ground engineering)  
 PROF. R. J. MAIR (Leader)

**4D5** (Foundation engineering)  
 DR S. HAIGH

**4D6** (Dynamics in civil engineering)  
 DR S. HAIGH (Leader)

**4D15** (Sustainable water engineering)  
 DR R. FENNER (Leader)

**Faculty of Engineering (continued)****ENGINEERING TRIPOS, PART IIB (continued)**

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**GROUP E: Management and Manufacturing****4E1** (Technological innovation: research and practice)  
DR T. MINSHALL (Leader)**4E4** (Management of technology)  
DR T. MINSHALL (Leader)**4E6** (Accounting and finance)  
DR P. SZILAGYI (Leader)**GROUP F: Information Engineering****4F1** (Control system design)  
PROF. M. C. SMITH (Leader)**4F6** (Signal detection and estimation)  
PROF. W. J. FITZGERALD (Leader)**4F7** (Digital filters and spectrum estimation)  
DR S. SINGH (Leader)**4F8** (Image processing and image coding)  
DR J. LASENBY (Leader)**4F10** (Statistical pattern processing)  
DR M. J. GALES (Leader)**4F12** (Computer vision and robotics)  
PROF. R. CIPOLLA (Leader)**GROUP G: Engineering for the Life Sciences****4G3** (Computational neuroscience)  
DR M. LENGYEL (Leader)**4G4** (Biomimetics)  
DR M. L. OYEN (Leader)**4G6** (Cellular and molecular biomechanics)  
DR V. DESHPANDE (Leader)**GROUP I: Imported Modules****4I1** (Strategic valuation)  
DR D. JIANG (Leader)**4I5** (Nuclear materials)  
PROF. A. L. GREER (Leader)**4I7** (Electricity and Environment)  
DR W. NUTTALL (Leader)**GROUP M: Multidisciplinary Modules****4M3** (Spanish)  
MR S. BIANCHI (Leader)**4M4** (Japanese)  
MS M. ASHIKARI (Leader)**4M13** (Complex analysis and optimisation)  
DR G. T. PARKS (Leader)**4M14** (Sustainable development)  
DR P. GUTHRIE (Leader)**GROUP R: Research modules (open to certain undergraduates)****4E5** (International business economics)  
DR J. ZHANG (Leader)**4E11** (Strategic management)  
DR Z. ZYGLIDOPOULOS (Leader)**4E12** (Project management)  
DR P. HEFFERNAN (Leader)**4F2** (Robust and non-linear systems and control)  
DR G. VINNICOMBE (Leader)**4F5** (Advanced wireless communications)  
DR A. GUILLEN I FABREGAS (Leader)**4F11** (Speech and language processing)  
PROF. P. WOODLAND (Leader)**4F13** (Machine learning)  
PROF. Z. GHARAMANI (Leader)**4G2** (Biosensors)  
DR A. SESHIA (Leader)**4G5** (Biomolecular modelling)  
DR G. CSANYI (Leader)**4I8** (Medical Physics)  
DR R. ANSORGE (Leader)**4M1** (French)  
MR C. D'ANGELO (Leader)**4M2** (German)  
MR M. KRANERT (Leader)**4M12** (PDEs and variational methods)  
DR G. WELLS (Leader)**4M15** (Sustainable energy)  
DR S. SCOTT (Leader)**4M16** (Nuclear power engineering)  
DR G. T. PARKS (Leader)**5R1** (Stochastic processes and optimisation methods)  
DR G. T. PARKS (Leader)**4I6** (Synthetic biology)  
DR A. KABLA (Leader) (Long Vacation)**4M9** (Surveying field course)  
MR A. L. JOHNSON (Leader) (Long Vacation)

**Faculty of Engineering (continued)****MANUFACTURING ENGINEERING TRIPOS, PART I**

MICHAELMAS 2010

LENT 2011

EASTER 2011

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A detailed timetable will be displayed in the Department.

Lectures in *the Institute for Manufacturing, Alan Reece Building, West Cambridge***3P1 (Materials into Products)**

Leaders: Dr H. R. Shercliff and Prof. I. M. Hutchings

**3P2 (Production Machines and Systems)**

Leader: Mr M. J. Platts

**3P3 (Product design)**

Leader: Dr J. Moultrie

**3P6 (Organizational Behaviour)**

Leader: Dr J. Trevor

**3P8 (Financial and Management Accounting)**

Leader: Dr A. Cosh

**3P10 (Contemporary Issues in Manufacturing)**

Leader: Dr C. Y. Barlow

**3P4 (Operations Management)**

Leader: Dr A. Parlikad

**3P5 (Industrial Engineering)**

Leader: Dr K. W. Platts

**3P7 (Managing Business and People)**

Leader: Dr P. Heffernan

**3P9 (Industrial Economics, Strategy and Governance)**

Leader: Dr A. Cosh