

## 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 2008

LENT 2009

EASTER 2009

#### PART IA

#### First year: for students intending to take Part IA in 2009

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/courses/syllabuses.html>

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

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

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

DR C. R. MIDDLETON *LT0*  
Structural Mechanics (Twelve lectures)

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

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

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

DR T. P. HYNES (Twelve lectures)  
DR J. LONGLEY *LT2* (Twelve lectures)  
PROF. J. B. YOUNG ET AL *LT1* (Sixteen lectures)  
DR A. H. GEE  
Computing (Four lectures)  
DR G. T. PARKS *LT0*  
Dimensional Analysis (Four lectures)  
DR P. J. CLARKSON AND OTHERS *LT0*  
Design of Products (Two lectures)  
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)  
DR H. BABINSKY/DR A. WHITE *LT0*  
Thermofluid Mechanics (Sixteen lectures)

DR S. D. GUEST *LT0*  
Structural Mechanics (Twelve lectures)  
DR H. R. SHERCLIFF *LT0*  
Materials (Ten lectures)

DR C. DURKAN *LT0*  
The same continued. (Two lectures)  
DR F. UDREA *LT0*  
The same continued. (Four lectures)  
PROF. R. V. PENTY *LT2*  
Digital Circuits (Sixteen lectures)

PROF. R. W. PRAGER *LT0* (Nine lectures)  
DR A. H. GEE *LT0*  
Computing (Four lectures)

DR P. J. CLARKSON AND OTHERS *LT0*  
Design of Products (Eight lectures)

The same continued. Laboratory Signing (to be arranged)

The same continued. (Eight lectures)

The same continued. (Eight lectures)

DR V. DESHPANDE *LT0*  
The same continued. (Ten lectures)

DR T. D. WILKINSON *LT0*  
Electromagnetics (Twelve lectures)

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

The same continued.

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

MICHAELMAS 2008

LENT 2009

EASTER 2009

**Second year: for students intending to take Part IB in 2008**

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/courses/syllabuses.html>

**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)**

PROF. N. COLLINGS AND DR R. MILLER *LTO* (Sixteen 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)  
Example Classes (Eight classes)  
Laboratory (to be arranged)  
Engineering Applications (TBA)

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

The same continued. (Four lectures)  
DR S. GUEST (Eight lectures) *LTO*

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)  
DR J. LASENBY  
Signal and Data Analysis Fourier transforms  
(Seven lectures)

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

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

**(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 H. E. M. HUNT, DR H. R. SHERCLIFF,  
DR M. P. F. SUTCLIFFE AND DR D. D.  
SYMONS  
Mechanics, Materials and Design  
PROF. N. G. KINGSBURY 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  
PROF. I. M. HUTCHINGS ET AL  
Manufacturing and Management  
DR M. KITSON  
Introductory Business Economics

## Faculty of Engineering (continued)

### ENGINEERING TRIPOS, PART IIA

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

MICHAELMAS 2008	LENT 2009	EASTER 2009
<p><b>3A1: Fluid mechanics I</b> Leader Dr T. B. Nickels</p> <p><b>3A3: Fluid mechanics II</b> Leader Prof. R. S. Cant</p> <p><b>3A5: Thermodynamics and power generation</b> Leader Prof. J. B. Young</p> <p><b>3B1: Radio frequency electronics</b> Leader Dr P. A. Robertson</p> <p><b>3B3: Switch-mode electronics</b> Leader Dr P. R. Palmer</p> <p><b>3B5: Semiconductor engineering</b> Leader Prof. P. Migliorato</p> <p><b>3C1: Materials processing and design</b> Leaders Dr H. R. Shercliff and Dr C. Y. Barlow</p> <p><b>3C5: Dynamics</b> Leader Dr H. E. M. Hunt</p> <p><b>3C7: Mechanics of solids</b> Leader Dr C. J. Burgoyne</p> <p><b>3C8: Machine design</b> Leader Dr D. J. Cole</p> <p><b>3D1: Geotechnical engineering</b> Leader Prof. M. D. Bolton</p> <p><b>3D3: Structural materials and design</b> Leader Dr K. A. Seffen</p> <p><b>3D6: Environmental geotechnics</b> Leader Dr S. P. G. Madabhushi</p> <p><b>3E1: Business economics</b> Leader Dr M. Kitson</p> <p><b>3E3: Modelling risk</b> Leader Dr T. Driouchi</p> <p><b>3E5: Human resource management</b> Leader TBA</p> <p><b>3F1: Signals and systems</b> Leader Dr N. G. Kingsbury</p> <p><b>3F4: Data transmission</b> Leader Dr I. Wassell</p> <p><b>3F5: Computer and network systems</b> Leader Dr A. H. Gee</p> <p><b>3I1: Data structures and algorithms (CST)</b> Leader Dr A. Norman</p> <p><b>3G1: Introduction to bioscience</b> Leader: Dr J. Archer</p> <p><b>3G4: Medical imaging and 3-D computer graphics</b> Leader Dr A. H. Gee</p> <p><b>4C4: Design methods</b> Leader Dr D. P. Symons</p> <p><b>4M13: Complex analysis and optimization</b> Leader Dr G. T. Parks</p> <p><i>For all students:</i> Laboratory/coursework W. F. 11-1, 2.15-4.15</p>	<p>The same continued.</p> <p>The same continued.</p> <p><b>3A6: Heat and mass transfer</b> Leader Dr N. Swaminathan</p> <p><b>3B2: Integrated digital electronics</b> Leader Dr A. C. Ferrari</p> <p><b>3B4: Electric drive systems</b> Leader Dr P. R. Palmer</p> <p><b>3B6: Photonic technology</b> Leader Prof. I. H. White</p> <p><b>3C2: Materials process modelling and failure analysis</b> Leaders Dr H. R. Shercliff and Dr C. Y. Barlow</p> <p><b>3C6: Vibration</b> Leader Prof. J. Woodhouse</p> <p><b>3D2: Geotechnical engineering II</b> Leader Prof. M. D. Bolton</p> <p><b>3D4: Structural analysis and stability</b> Leader Dr F. Cirak</p> <p><b>3D5: Water engineering</b> Leader Dr D. F. Liang</p> <p><b>3D7: Finite element methods</b> Leader Dr G. Wells</p> <p><b>3E2: Marketing</b> Leader Dr O. Merlo</p> <p><b>3E6: Organisational behaviour and change</b> Leader Dr K. Kerry</p> <p><b>3E10: Operations management for engineers</b> Leader Dr R. Steinberg</p> <p><b>3F2: Systems and control</b> Leader Prof. J. M. Maciejowski</p> <p><b>3F3: Signal and pattern processing</b> Leader Dr O. Punsakaya</p> <p><b>3F6: Software engineering and design</b> Leader Prof. S. J. Young</p> <p><b>3G2: Mathematical physiology</b> Leader Dr A. Kabla</p> <p><b>3G3: Introduction to neuroscience</b> Leader Prof. D. Wolpert</p> <p><b>3G5: Biomaterials</b> Leader Dr M. L. Oyen</p> <p><b>4A1: Nuclear power engineering</b> Leader Dr G. T. Parks</p> <p><b>4D16: Construction and management</b> Leader Dr A. Al-Tabbaa</p> <p><b>4M12: Partial differential equations and variational methods</b> Leader Dr T. P. Hynes</p>	

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**Faculty of Engineering (continued)**  
**ENGINEERING TRIPOS, PART II<sub>B</sub>**

MICHAELMAS 2008

LENT 2009

EASTER 2009

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

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

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

**4A4** (Aircraft stability and control)  
 DR W. R. GRAHAM (Leader)

**4A7** (Aerodynamics)  
 DR H. BABINSKY (Leader)

**4A8** (Environmental fluid mechanics)  
 DR E. MASTORASKOS (Leader)

**4A9** (Molecular Thermodynamics)  
 PROF. J. B. YOUNG (Leader)

**4A14** (Silent aircraft initiative)  
 PROF. A. P. DOWLING (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)

**4B17** (Photonics of molecular materials)  
 PROF. H. COLES (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)  
 DR D. D. SYMONS (Leader)

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

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

**4C9** (Continuum mechanics)  
 PROF. J. A. WILLIAMS (Leader)

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

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

**4D10** (Structural steelwork)  
 DR K. A. SEFFEN (Leader)

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

**4D13** (Architectural engineering)  
 DR A. MCROBIE (Leader)

**4D14** (Contaminated land and waste containment)  
 DR A. AL-TABBAA (Leader)

**4A1** (Nuclear power engineering)  
 DR G. T. PARKS (Leader)

**4A10** (Flow instability)  
 DR J. R. DAWSON (Leader)

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

**4A12** (Turbulence and vortex dynamics)  
 PROF. R. S. CANT (Leader)

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

**4C8** (Applications of dynamics)  
 MR A. L. JOHNSON (Leader)

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

**4C16** (Advanced machine design)  
 DR M. P. F. SUTCLIFFE (Leader)

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

**4D6** (Dynamics in civil engineering)  
 DR M. S. P. G. MADABHUSHI (Leader)

**4D9** (Plates and shells: theory and computation)  
 DR F. CIRAK (Leader)

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

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

## Faculty of Engineering (continued)

## ENGINEERING TRIPOS, PART IIB (continued)

MICHAELMAS 2008

LENT 2009

EASTER 2009

**GROUP E: Management and Manufacturing**

**4E1** (Technological innovation: research and practice)  
DR E. GARNSEY (Leader)

**4E4** (Management of technology)  
DR T. MINSHALL (Leader)

**4E6** (Accounting and finance)  
DR G. MEEKS (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)

**4F10** (Statistical pattern processing)  
DR M. J. GALES (Leader)

**GROUP G: Engineering for the Life Sciences**

**4G3** (Computational neuroscience)  
DR M. LENGVEL (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. RALPH (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 C. PITELIS (Leader)

**4E11** (Strategic management)  
DR Z. ZYGLIDOPOULOS (Leader)

**4E12** (Project management)  
DR J. MOULTRIE (Leader)

**4E13** (Game Theory and auctions for engineering applications)  
DR R. STEINBERG (Leader)

**4F2** (Robust multivariable control)  
DR J. M. GONCALVES (Leader)

**4F3** (Nonlinear and predictive control)  
DR J. M. MACIEJOWSKI (Leader)

**4F5** (Advanced wireless communications)  
DR A. GUILLEN I FABREGAS (Leader)

**4F8** (Image processing and image coding)  
DR J. LASENBY (Leader)

**4F11** (Speech and language processing)  
PROF. P. WOODLAND (Leader)

**4F13** (Machine learning)  
PROF. Z. GHAHRAMANI (Leader)

**4G1** (Systems biology)  
DR J. M. GONCALVES (Leader)

**4G5** (Biomolecular modelling)  
DR G. CSANYI (Leader)

**4I3** (Entrepreneurial science and innovation policy)  
PROF. A. HUGHES (Leader)

**4I4** (Information theory-pattern recognition and neural networks)  
PROF. D. MACKAY (Leader)

**4M1** (French)  
MR C. D'ANGELO (Leader)

**4M2** (German)  
MR M. KRANERT (Leader)

**4M12** (PDEs and variational methods)  
DR T. P. HYNES (Leader)

**4M15** (Sustainable energy)  
DR S. SCOTT (Leader)

**5R1** (Stochastic processes and optimisation methods)  
DR G. T. PARKS (Leader)

**5R5** (Advanced experimental methods in geomechanics)  
DR G. MADABHUSHI (Leader)

**4M9** (Surveying field course)  
MR A. L. JOHNSON (Leader) (Long Vacation)

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

MICHAELMAS 2008

LENT 2009

EASTER 2009

A detailed timetable will be displayed in the Department.

Lectures in *Mill Lane* and in the *Department of Engineering****Paper P1 (Design and Manufacture)***

Leader: Dr K. W. Platts

The same continued.

***Paper P2 (Organization and Control of Manufacturing Systems)***

Leader: Mr A. K. N. Parlikad

The same continued.

***Paper P3 (Management Economics and Accounting)***

Leader: Dr A. D. Cosh

The same continued.

***Paper P4 (Engineering Materials and Processing)***

Leaders: Dr C. Y. Barlow and Dr H. R. Shercliff

The same as Engineering Tripos, Part IIA, 3C1 and 3C2

The same continued.

***Paper P5 (Human Resources)***

Leader: Dr C. Gill

The same continued.

Factory Visits. Workshops. Tu. all day

Laboratory/Projects (to be arranged)