

## 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 2006

LENT 2007

EASTER 2007

#### PART IA

#### First year: for students intending to take Part IA in 2007

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 D. M. HOLBURN  
Linear Circuits and Devices (Sixteen lectures)

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

DR F. HUNT (Twelve lectures)  
DR J. LONGLEY *LT2* (Twelve lectures)  
DR A. R. L. TRAVIS *LT1* (Sixteen lectures)  
DR A. H. GEE (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 M. P. F. SUTCLIFFE 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 D. M. HOLBURN *LT0*  
The same continued. (Two lectures)  
DR F. UDREA *LT0*  
The same continued. (Four lectures)  
PROF. R. V. PENTY *LT2*  
Digital Circuits (Sixteen lectures)

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

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

The same continued. Laboratory Signing (to be arranged)

The same continued. (Eight lectures)

The same continued. (Eight lectures)

DR M. P. F. SUTCLIFFE *LT0*  
The same continued. (Ten lectures)

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

PROF. W. FITZGERALD *LT0* (Seven lectures)

The same continued.

**Faculty of Engineering (continued)**  
**ENGINEERING TRIPOS, PART 1B**

MICHAELMAS 2006

LENT 2007

EASTER 2007

**Second year: for students intending to take Part 1B in 2007**

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)**

PROF. S. PELLEGRINO *LTO*  
 Structures (Eight lectures)

**Paper 3 (Materials)**

DR N. A. FLECK, DR H. R. SHERCLIFF AND PROF. I.  
 HUTCHINGS *LTO*  
 Materials (Sixteen lectures)

**Paper 4 (Thermofluid Mechanics)**

PROF. N. COLLINGS *LTO*  
 DR M. JUNIPER (Two lectures)  
 Thermofluid Mechanics (Fourteen lectures)

**Paper 5 (Electrical Engineering)**

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

**Paper 6 (Information Engineering)**

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

**Paper 7 (Mathematical Methods)**

DR P. A. DAVIDSON *LTO*  
 Vector Calculus (Fourteen lectures)  
 DR T. P. HYNES *LTO*  
 Linear Algebra (Eight 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 J. LEES (Eight lectures) *LTO*

DR M. JUNIPER  
 The same continued. (Ten lectures)

DR T. FLACK *LTO*  
 Electrical Power (Ten lectures)  
 PROF. G. AMARATUNGA *LTO*  
 E. M. Fields and Waves (Six lectures)  
 DR R. MCMAHON *LTO*  
 Linear Circuits and Devices (Two lectures)

DR J. LASENBY *LTO*  
 Communications (Eight lectures)  
 Signal and Data Analysis (Six lectures)

DR J. P. LONGLEY *LTO*  
 Probability (Six 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  
 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. R. CIPOLLA AND PROF. Z. GHABRAMANI  
 Information Engineering  
 PROF. J. ROBERTSON AND PROF. W. I. MILNE  
 Electrical Engineering  
 DR J. P. LONGLEY  
 Aerothermal Engineering  
 PROF. D. M. WOLPERT  
 Biomedical Engineering  
 PROF. I. M. HUTCHINGS  
 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 2006

LENT 2007

EASTER 2007

<b>3A1: Fluid mechanics I</b> Leader Prof. R. Britter	The same continued.
<b>3A3: Fluid mechanics II</b> Leader Prof. H. P. Hodson	The same continued.
<b>3A5: Thermodynamics and power generation</b> Leader Prof. J. P. Young	<b>3A6: Heat and mass transfer</b> Leader Dr N. Swaminathan
<b>3B1: Radio frequency electronics</b> Leader Dr P. A. Robertson	<b>3B2: Integrated digital electronics</b> Leader Dr F. Udrea
<b>3B3: Switch-mode electronics</b> Leader Dr P. R. Palmer	<b>3B4: Electric drive systems</b> Leader Dr P. R. Palmer
<b>3B5: Semiconductor engineering</b> Leader Dr A. Flewitt	<b>3B6: Photonic technology</b> Leader Prof. I. H. White
<b>3C1: Materials processing and design</b> Leaders Dr H. R. Shercliff and Dr C. Y. Barlow	<b>3C2: Materials process modelling and failure analysis</b> Leaders Dr H. R. Shercliff and Dr C. Y. Barlow
<b>3C3: Machine design – tribology</b> Leader Dr J. A. Williams	<b>3C4: Machine design – transmissions</b> Leader Dr N. P. F. Sutcliffe
<b>3C5: Dynamics</b> Leader Dr H. E. M. Hunt	<b>3C6: Vibration</b> Leader Dr D. Cebon
<b>3C7: Mechanics of solids</b> Leader Dr C. J. Burgoyne	<b>3D7: Finite element methods</b> Leader Dr K. Soga
<b>3D1: Soil mechanics</b> Leader Prof. M. D. Bolton	<b>3D2: Geotechnical engineering</b> Leader Dr K. Soga
<b>3D3: Structural materials and design</b> Leader Dr J. M. Lees	<b>3D4: Structural analysis and stability</b> Leader Prof. S. Pellegrino
<b>3D6: Environmental engineering II</b> Leader Dr S. P. G. Madabhushi	<b>3D5: Environmental engineering I</b> Leader Dr F. A. McRobie
<b>3E1: Business economics</b> Leader Dr M. Kitson	<b>3E2: Marketing</b> Leader Dr O. Merlo
<b>3E3: Modelling risk</b> Leader Dr L. C. Storoni	<b>3E6: Organisational behaviour and change</b> Leader Mr P. Fleming
<b>3E5: Human resource management</b> Leader Dr C. Gill	<b>3E8: Modelling data and dynamics in management</b> Leader Dr D. Reiner
<b>3F1: Signals and systems</b> Leader Dr J. M. Goncalves	<b>3F2: Systems and control</b> Leader Dr J. M. Maciejowski
<b>3F4: Data transmission</b> Leader Dr I. Wassell	<b>3F3: Signal and pattern processing</b> Leader Dr S. J. Godsill
<b>3F5: Computer and network systems</b> Leader Dr A. H. Gee	<b>3F6: Software engineering and design</b> Leader Dr T. W. Drummond
<b>3I1: Data structures and algorithms</b> Leader Dr T. W. Drummond	<b>3G2: Physiological systems</b> Leader Dr R. Saumarez
<b>3G1: Introduction to bioscience</b> Leader: Dr J. Archer	<b>3G3: Introduction to neuroscience</b> Leader Prof. D. Wolpert
<b>4C4: Design methods</b> Leader Dr D. P. Symons	<b>4A1: Nuclear power engineering</b> Leader Dr G. T. Parks
<b>4D16: Construction and management</b> Leader Dr C. T. Morley	<b>4C14: Engineering principles of the cell</b> Leader Prof. N. A. Fleck
<b>4F9: Medical imaging and 3-D computer graphics</b> Leader Dr A. H. Gee	<b>4D11: Building physics</b> Leader Dr C. T. Morley
<b>4M13: Complex analysis and optimization</b> Leader Dr G. T. Parks	<b>4M12: PDEs and variational methods</b> Leader Prof. J. Woodhouse

*For all students:*

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

*continued >*

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

MICHAELMAS 2006

LENT 2007

EASTER 2007

**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 T. B. NICKELLS (Leader)

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

**4A13** (Introduction to combustion)  
 PROF. S. HOCHGREB (Leader)

**GROUP B: Electrical Engineering**

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

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

**4B8** (Electronic system design)  
 DR D. DUKIC (Leader)

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

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

**4B17** (Photonics of molecular materials)  
 PROF. H. COLES (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. R. S. LANGLEY (Leader)

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

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

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

**4D2** (Lightweight structures)  
 DR S. D. GUEST (Leader)

**4D7** (Concrete and masonry structures)  
 DR C. T. MORLEY (Leader)

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

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

**4A12** (Turbulence)  
 DR P. A. DAVIDSON (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 telecommunication networks)  
 DR T. WILKINSON (Leader)

**4C1** (Design against failure)  
 DR V. DESHPANDE (Leader)

**4C5** (Design case studies)  
 PROF. P. J. CLARKSON (Leader)

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

**4C14** (Engineering principles of the cell)  
 PROF. N. A. FLECK (Leader)

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

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

**4D5** (Foundation engineering)  
 TO BE ANNOUNCED (Leader)

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

**4D9** (Plates and shells: theory and computation)  
 DR K. A. SEFFEN (Leader)

## Faculty of Engineering (continued)

## ENGINEERING TRIPOS, PART IIB (continued)

MICHAELMAS 2006

LENT 2007

EASTER 2007

**4D16** (Construction and management)  
DR C. T. MORLEY (Leader)

**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 R. CHATTERJEE (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. J. GODSILL (Leader)

**4F9** (Medical imaging and 3-D computer graphics)  
DR A. H. GEE (Leader)

**4F12** (Computer vision and robotics)  
PROF. R. CIPOLLA (Leader)

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

**GROUP G: Engineering for the Life Sciences****GROUP I: Imported Modules**

**4I1** (Strategic valuation)  
DR D. RALPH (Leader)

**4I3** (Distribution networks)  
DR M. POLLITT (Leader)

**GROUP M: Multidisciplinary Modules**

**4M3** (Spanish)  
MR S. BIANCHI (Leader)

**4M4** (Japanese)  
MS M. ASHIKARI (Leader)

**4M6** (Materials and processes for microsystems (MEMS))  
DR A. FLEWITT (Leader)

**4M13** (Complex analysis and optimisation)  
DR G. T. PARKS (Leader)

**4M14** (Sustainable development)  
DR R. FENNER (Leader)

**GROUP R: Research modules (open to certain undergraduates)**

**4D11** (Building physics)  
DR C. T. MORLEY (Leader)

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

**4E3** (Information systems)  
DR M. R. JONES (Leader)

**4E5** (International business economics)  
DR M. KITSON (Leader)

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

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

**4F2** (Robust multivariable control)  
DR G. VINNICOMBE (Leader)

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

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

**4F10** (Statistical pattern processing)  
PROF. P. WOODLAND (Leader)

**4G1** (Computational and systems biology)  
DR G. VINNICOMBE (Leader)

**4G2** (Biosensors)  
DR A. A. SESHIA (Leader)

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

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

**4M12** (PDEs and variational methods)  
PROF. J. WOODHOUSE (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)

**5R11** (Applications in MEMS)  
DR J. A. WILLIAMS (Leader)

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

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

MICHAELMAS 2006

LENT 2007

EASTER 2007

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: Dr D. McFarlane

The same continued.

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

Leader: Mr P. Guest

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. Grey

The same continued.

Factory Visits. Workshops. Tu. all day  
Laboratory/Projects (to be arranged)