# 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 2005 | LENT 2006 | EASTER 2006 |
|---|---|---|

## PART IA

## First year: for students intending to take Part IA in 2006

*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

| MICHAELMAS 2005 | LENT 2006 | EASTER 2006 |
|---|---|---|
| ***Paper 1 (Mechanical Engineering)*** | | |
| DR H. E. M. HUNT *LT0*<br>Mechanics (Sixteen lectures) | PROF. R. S. LANGLEY *LT0*<br>Mechanical Vibrations (Four lectures)<br>DR H. BABINSKY *LT0*<br>Thermofluid Mechanics (Sixteen lectures) | The same continued. (Eight lectures)<br>PROF. N. COLLINS<br>The same continued. (Eight lectures) |
| ***Paper 2 (Structural Mechanics and Materials)*** | | |
| DR C. R. MIDDLETON *LT0*<br>Structural Mechanics (Twelve lectures) | DR S. D. GUEST *LT0*<br>Structural Mechanics (Twelve lectures)<br>DR H. R. SHERCLIFF *LT0*<br>Materials (Ten lectures) | DR M. P. F. SUTCLIFFE *LT0*<br>The same continued. (Ten lectures) |
| ***Paper 3 (Electrical and Information Engineering)*** | | |
| DR D. M. HOLBURN<br>Linear Circuits and Devices (Sixteen lectures) | DR D. M. HOLBURN *LT0*<br>The same continued. (Two lectures)<br>DR F. UDREA *LT0*<br>The same continued. (Four lectures)<br>PROF. R. V. PENTY *LT2*<br>Digital Circuits (Sixteen lectures) | DR T. D. WILKINSON *LT0*<br>Electromagnetics (Twelve lectures) |
| ***Paper 4 (Mathematics)*** | | |
| DR F. HUNT (Twelve lectures)<br>DR A. WHITE *LT2* (Twelve lectures)<br>DR A. R. L. TRAVIS *LT1* (Sixteen lectures)<br>DR A. H. GEE (Four lectures) | DR R. W. PRAGER *LT0* (Nine lectures)<br>DR A. H. GEE *LT0*<br>Computing (Four lectures) | PROF. M. C. SMITH *LT0* (Seven lectures) |
| DR G. T. PARKS *LT0*<br>Dimensional Analysis (Four lectures) | DR K. M. WALLACE AND OTHERS *LT0*<br>Design of Products (Eight lectures)<br>PROF. M. J. GREGORY AND OTHERS *LT0*<br>Engineer in Society (Eight lectures) | |
| DR M. P. F. SUTCLIFFE AND OTHERS<br>Laboratory | The same continued.<br>Laboratory Signing (to be arranged) | The same continued. |

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# Faculty of Engineering (continued)

## ENGINEERING TRIPOS, PART IB

| MICHAELMAS 2005 | LENT 2006 | EASTER 2006 |
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## Second year: for students intending to take Part IB in 2006

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)**

DR D. CEBON
Dynamics (Sixteen lectures)

**Paper 2 (Structures)**
PROF. S. PELLEGRINO *LT0*
Structures (Eight lectures)

The same continued. (Four lectures)
DR J. LEES (Eight lectures) *LT0*

**Paper 3 (Materials)**
DR D. R. H. JONES AND PROF. I. HUTCHINGS *LT0*
Materials (Sixteen lectures)

**Paper 4 (Thermofluid Mechanics)**
DR R. S. CANT *LT0*
DR M. JUNIPER (Two lectures)
Thermofluid Mechanics (Fourteen lectures)

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

**Paper 5 (Electrical Engineering)**
DR R. MCMAHON *LT0*
Linear Circuits and Devices (Ten lectures)

DR T. FLACK *LT0*
Electrical Power (Ten lectures)
PROF. G. AMARATUNGA *LT0*
E. M. Fields and Waves (Six lectures)

**Paper 6 (Information Engineering)**
DR G. VINNICOMBE *LT0*
Linear Systems (Fourteen lectures)

DR J. LASENBY *LT0*
Communications (Eight lectures)
Signal and Data Analysis (Six lectures)

**Paper 7 (Mathematical Methods)**
DR P. A. DAVIDSON *LT0*
Vector Calculus (Fourteen lectures)
DR T. P. HYNES *LT0*
Linear Algebra (Eight lectures)

DR J. P. LONGLEY *LT0*
Probability (Six lectures)

**Paper 8 (Selected topics)**

**(All fourteen lectures and two examples classes)**
*All lectures in LT1/LT2*
DR K. SOGA AND DR C. J. BURGOYNE
Civil and Structural Engineering
DR V. DESHPANDE, PROF. N. A. FLECK AND PROF. M. F. ASHBY
Mechanics, Materials and Design
PROF. R. CIPOLLA AND DR N. G. KINGSBURY
Information Engineering
PROF. J. ROBERTSON AND PROF. W. I. MILNE
Electrical Engineering
DR J. P. LONGLEY
Aerothermal Engineering
DR R. W. PRAGER
Biomedical Engineering
DR J. M. ALLWOOD
Manufacturing, Management and Design

DR M. KITSON
Corporate Strategy (Eight lectures)

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

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

# 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 2005 | LENT 2006 | EASTER 2006 |
|---|---|---|
| **3A1: Fluid mechanics I**<br>Leader Prof. W. N. Dawes | The same continued. | |
| **3A3: Fluid mechanics II**<br>Leader Dr J. P. Longley | The same continued. | |
| **3A5: Energy and power generation**<br>Leader Dr A. J. White | **3A6: Heat and mass transfer**<br>Leader Dr N. Swaminathan | |
| **3B1: Radio frequency electronics**<br>Leader Dr P. A. Robertson | **3B2: Integrated digital electronics**<br>Leader Dr F. Udrea | |
| **3B3: Switch-mode electronics**<br>Leader Dr P. R. Palmer | **3B4: Electric drive systems**<br>Leader Dr P. R. Palmer | |
| **3B5: Semiconductor engineering**<br>Leader Dr A. Flewitt | **3B6: Photonic technology**<br>Leader Prof. I. H. White | |
| **3C1: Materials processing and design**<br>Leader Dr H. R. Shercliff | **3C2: Materials process modelling and failure analysis**<br>Leader Dr H. R. Shercliff | |
| **3C3: Machine design – tribology**<br>Leader Dr J. A. Williams | **3C4: Machine design - transmissions**<br>Leader Dr D. J. Cole | |
| **3C5: Dynamics**<br>Leader Dr H. E. M. Hunt | **3C6: Vibration**<br>Leader Dr D. Cebon | |
| **3C7: Mechanics of solids**<br>Leader Prof. T. J. Lu | **3D7: Finite element methods**<br>Leader Dr K. Soga | |
| **3D1: Soil mechanics**<br>Leader Prof. M. D. Bolton | **3D2: Geotechnical engineering**<br>Leader Dr D. J. White | |
| **3D3: Structural materials and design**<br>Leader Dr J. M. Lees | **3D4: Structural analysis and stability**<br>Leader Dr C. J. Burgoyne | |
| **3D5: Environmental engineering I**<br>Leader TBA | **3D6: Environmental engineering II**<br>Leader Dr S. P. G. Madabhushi | |
| **3E1: Business economics**<br>Leader Dr P. Kattuman | **3D7: Finite element methods**<br>Leader Dr K. Soga | |
| **3E5: Human resource management**<br>Leader Mr J. Berridge | **3E2: Marketing**<br>Leader Dr O. Merlo | |
| **3E9: Accounting and finance**<br>Leader Dr R. Chatterjee | **3E6: Organisational behavior and change**<br>Leader Prof. C. Grey | |
| **3F1: Signals and systems**<br>Leader Dr J. M. Goncalves | **3E8: modelling data and dynamics**<br>Leader Dr D. Ralph | |
| **3F4: Data transmission**<br>Leader Dr I. Wassell | **3F2: Systems and control**<br>Leader Dr J. M. Maciejowski | |
| **3F5: Computer and network systems**<br>Leader Dr A. H. Gee | **3F3: Signal and pattern processing**<br>Leader Dr S. J. Godsill | |
| **3I1: Data structures and algorithms**<br>Leader Prof. A. Hopper | **3F6: Software engineering and design**<br>Leader Dr T. W. Drummond | |
| **3M1:Introduction to bioscience**<br>Leader: Dr J. Archer | **3M2: Physiological systems**<br>Leader: Dr R. Saumarez | |
| **4C4: Design methods**<br>Leader Prof. K. M. Wallace | **4A1: Nuclear power engineering**<br>Leader Dr G. T. Parks | |
| **4D8: Prestressed concrete**<br>Leader Dr C. J. Burgoyne | **4C14: Mechanics of biological systems**<br>Leader Prof. N. A. Fleck | |
| **4M13: Complex analysis and optimization**<br>Leader: Dr G. T. Parks | **4D13: Architectural engineering**<br>Leader Dr C. R. Middleton | |
| *For all students:*<br>Laboratory/coursework W. F. 11–1, 2.15–4.15 | | |

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# Faculty of Engineering (continued)

## ENGINEERING TRIPOS, PART IIB

| MICHAELMAS 2005 | LENT 2006 | EASTER 2006 |
|---|---|---|
| **GROUP A: Energy, Fluid Mechanics and Turbomachinery** | | |
| **4A2** (Computational fluid mechanics)<br>PROF. W. N. DAWES (Leader) | **4A1** (Nuclear power engineering)<br>DR G. T. PARKS (Leader) | |
| **4A3** (Turbomachinery I)<br>DR T. P. HYNES (Leader) | **4A7** (Aerodynamics)<br>DR H. BABINSKY (Leader) | |
| **4A8** (Environmental fluid mechanics)<br>DR E. MASTORAKOS (Leader) | **4A11** (Turbomachinery II)<br>DR L. XU (Leader) | |
| **4A9** (Molecular Thermodynamics)<br>PROF. J. B. YOUNG (Leader) | **4A12** (Turbulence)<br>DR P. A. DAVIDSON (Leader) | |
| **4A10** (Flow instability)<br>PROF. A. P. DOWLING (Leader) | **4A13** (Introduction to combustion)<br>PROF. S. HOCHGREB (Leader) | |
| | **4A14** (Silent aircraft initiative)<br>PROF. A. P. DOWLING (Leader) | |
| **GROUP B: Elecrical Engineering** | | |
| **4B5** (Nanotechnology)<br>DR C. DURKAN (Leader) | **4B2** (Power electronics and applications)<br>DR F. UDREA (Leader) | |
| **4B8** (Electronic system design)<br>DR D. DUKIC (Leader) | **4B6** (Solid state devices and chemical/biological sensors)<br>DR D. F. MOORE (Leader) | |
| **4B11** (Photonic systems)<br>DR T. D. WILKINSON (Leader) | **4B7** (VLSI design, technology and CAD)<br>DR D. M. HOLBURN (Leader) | |
| **4B14** (Solar-electronic power: generation and distribution)<br>PROF. G. AMARATUNGA (Leader) | **4B13** (Electronic sensors and instrumentation)<br>DR P. A. ROBERTSON (Leader) | |
| **4B17** (Photonics of molecular materials)<br>PROF. H. COLES (Leader) | **4B15** (Advanced telecommunication networks)<br>DR T. WILKINSON (Leader) | |
| | **4B18** (Advanced electronic devices)<br>PROF. M. KELLY (Leader) | |
| **GROUP C: Mechanics, Materials and Design** | | |
| **4C2** (Designing with composites)<br>DR M. P. F. SUTCLIFFE (Leader) | **4C1** (Design against failure)<br>DR V. DESHPANDE (Leader) | |
| **4C3** (Electrical and nano materials)<br>PROF. D. A. CARDWELL (Leader) | **4C8** (Applications of Dynamics)<br>DR D. CEBON (Leader) | |
| **4C4** (Design methods)<br>PROF. K.M. WALLACE (Leader) | **4C14** (Mechanics of biological systems)<br>PROF. N. A. FLECK (Leader) | |
| **4C6** (Advanced linear vibration)<br>PROF. J. WOODHOUSE (Leader) | **4C15** (MEMS: design)<br>DR A. SESHIA (Leader) | |
| **4C7** (Random and non-linear vibration)<br>PROF. R. S. LANGLEY (Leader) | | |
| **4C9** (Continuum mechanics)<br>PROF. J. A. WILLIAMS (Leader) | | |
| **GROUP D: Civil, Structural and Environmental Engineering** | | |
| **4D2** (Lightweight structures)<br>DR S. D. GUEST (Leader) | **4D5** (Foundation engineering)<br>DR D. J. WHITE (Leader) | |
| **4D7** (Concrete and masonry structures)<br>DR C. T. MORLEY (Leader) | **4D6** (Dynamics in civil engineering)<br>DR S. P. G. MADABHUSHI (Leader) | |
| **4D10** (Structural steelwork)<br>PROF. C. R. CALLADINE (Leader) | **4D8** (Prestressed concrete)<br>DR C. J. BURGOYNE (Leader) | |

# Faculty of Engineering (continued)

## ENGINEERING TRIPOS, PART IIB (continued)

| MICHAELMAS 2005 | LENT 2006 | EASTER 2006 |
|---|---|---|
| **4D14** (Contaminated land and waste containment)<br>DR A. AL-TABBAA (Leader) | **4D13** (Architectural engineering)<br>DR C. R. MIDDLETON (Leader) | |
| | **4D15** (Sustainable water engineering)<br>DR R. FENNER (Leader) | |
| **GROUP E: Management and Manufacturing** | | |
| **4E1** (Technological innovation: research and practice)<br>DR E. W. GARNSEY (Leader) | **4E5** (International business economics)<br>DR M. POLLITT (Leader) | |
| **4E4** (Management of technology)<br>DR T. MINSHALL (Leader) | **4E7** (Enterprise and business development)<br>DR E. GARNSEY (Leader) | |
| **4E6** (Accounting and finance)<br>DR R. CHATTERJEE (Leader) | **4E11** (Strategic management)<br>DR Z. ZYGLIDOPOULOS (Leader) | |
| **4E8** (Design and management of manufacturing systems)<br>DR M. HOLWEG (Leader) | **4E12** (Project management)<br>TBA (Leader) | |
| **4E9** (Quantitative techniques in operations management)<br>DR R. STEINBERG (Leader) | | |
| **GROUP F: Information Engineering** | | |
| **4F1** (Control system design)<br>PROF. M. C. SMITH (Leader) | **4F2** (Robust multivariable control)<br>DR G. VINNICOMBE (Leader) | |
| **4F3** (Nonlinear and predictive control)<br>DR J. M. MACIEJOWSKI (Leader) | **4F8** (Image processing and image coding)<br>DR J. LASENBY (Leader) | |
| **4F6** (Signal detection and estimation)<br>PROF. W. J. FITZGERALD (Leader) | **4F9** (Medical imaging and 3D computer graphics)<br>DR A. H. GEE (Leader) | |
| **4F7** (Digital filters and spectrum estimation)<br>DR S. J. GODSILL (Leader) | | |
| **4F10** (Statistical pattern processing)<br>DR M. J. F. GALES (Leader) | | |
| **4F11** (Speech processing)<br>PROF. P. WOODLAND (Leader) | | |
| **4F12** (Computer vision and robotics)<br>PROF. R. CIPOLLA (Leader) | | |
| **GROUP I: Imported Modules** | | |
| **4I1** (Real options for engineering systems)<br>PROF. S. SCHOLTES (Leader) | | |
| **4I3** (Distribution networks: economics, market structures and strategies)<br>DR M. POLLITT (Leader) | | |
| **GROUP M: Multidisciplinary Modules** | | |
| **4M3** (Spanish)<br>MR S. BIANCHI (Leader) | **4M1** (French)<br>MR C. D'ANGELO (Leader) | |
| **4M4** (Japanese)<br>MS M. ASHIKARI (Leader) | **4M2** (German)<br>MR M. ROHDE (Leader) | |
| **4M6** (Materials and processes for microsystems (MEMS))<br>DR A. FLEWITT (Leader) | **4M12** (PDEs and variational methods)<br>PROF. J. WOODHOUSE (Leader) | |
| **4M13** (Complex analysis and optimisation)<br>DR G. T. PARKS (Leader) | | |
| **4M14** (Sustainable development)<br>DR R. FENNER (Leader) | | |
| **GROUP R: Research modules (open to certain undergraduates)** | | |
| **5R5** (Advanced experimental methods in geomechanics)<br>DR G. MADABHUSHI (Leader) | **5R1** (Stochastic processes and optimisation methods)<br>DR G. T. PARKS (Leader) | |
| | **5R11** (Applications in MEMS)<br>DR J. A. WILLIAMS (Leader) | |

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# Faculty of Engineering (continued)

## MANUFACTURING ENGINEERING TRIPOS, PART I

| MICHAELMAS 2005 | LENT 2006 | EASTER 2006 |
|---|---|---|

A detailed timetable will be displayed in the Department.

Lectures in *Mill Lane* and in the *Department of Engineering*

| | | |
|---|---|---|
| **Paper P1 (Design and Manufacture)**<br>Leader: Dr K. W. Platts | The same continued. | |
| **Paper P2 (Organisation and Control of Manufacturing Systems)**<br>Leaders: Dr M. Holweg and Dr D. McFarlane | The same continued. | |
| **Paper P3 (Management Economics and Accounting)**<br>Leader: Mr P. Guest | The same continued. | |
| **Paper P4 (Engineering Materials and Processing)**<br>Leaders: Dr C. Y. Barlow and Prof. I. Hutchings<br>The same as Engineering Tripos, Part IIA, 3C1 and 3C2 | The same continued. | |
| **Paper P5**<br>Leader: Dr C. Grey | The same continued. | |
| Factory Visits. Workshops. Tu. all day<br>Laboratory/Projects (to be arranged) | | |