

NATURAL SCIENCES TRIPOS, PART III

MICHAELMAS 2004

LENT 2005

EASTER 2005

ASTROPHYSICS

All lectures will be held in *the Centre for Mathematical Sciences meeting rooms (MR), Clarkson Road*

PROF. J. E. PRINGLE

Astrophysical Fluid Dynamics. Tu. Th. S. 11 *MR 9*

DR C. A. TOUT

Structure and Evolution of Stars. M. W. F. 12 *MR 15*

DR J. M. STEWART

General Relativity. M. W. F. 10 *MR 2*

PROF. A. C. DAVIS

Cosmology. Tu. Th. 10 *MR 2*

PROF. M. PETTINI

Physical Cosmology. M. W. F. 10 *MR 14*

PROF. G. F. GILMORE

Galaxies and Dark Matter. Tu. Th. S. 9 *MR 4*

DR G. I. OGILVIE

Accretion Discs. Tu. Th. 10 *MR 9*

PROF. M. R. E. PROCTOR

Dynamo Theory. M. Tu. Th. F. 10 *MR 5*

BIOCHEMISTRY

Course Organiser: Prof. D. J. Ellar E-mail: dje1@mole.bio.cam.ac.uk

The course starts with an introductory lecture by PROF. ELLAR at 9 a.m. on M. 4 Oct. in the *Lecture Theatre in the Sanger Building, Department of Biochemistry, Old Addenbrooke's Site*.

Research Techniques lectures will be held in the *Lecture Theatre in the Sanger Building, Department of Biochemistry, Old Addenbrooke's site*. Detailed time-tables will be posted in the *Department of Biochemistry*.

Option course lectures take place throughout the day in Lent Term. Detailed time-tables will be posted in the *Department of Biochemistry*.

Lectures are given in the *Department of Biochemistry*

Research project support

DEPARTMENTAL STAFF

Laboratory Safety, preparation of scientific figures and scientific reports, record keeping, experimental design, seminar presentation. 4–8 Oct.

Research Technique Lectures Tu. Th. 5

DEPARTMENTAL STAFF AND OTHERS

Organiser: Dr R. W. Farndale

Molecular Biology. (Six lectures)

Protein Expression and Purification. (Four lectures)

Analytical Techniques in Protein and Peptide

Characterization. (Three lectures)

Structure Determination by NMR and X-ray

Crystallography. (Four lectures)

Protein-Protein Interactions in Solution. (One lecture)

Research Project Colloquium

PROF. D. J. ELLAR AND DR P. DUPREE (Joint chairs)

Presentation of interim reports. 6–7 Dec.

Research Technique Lectures Tu. Th. 5

DEPARTMENTAL STAFF AND OTHERS

Organiser: Dr R. W. Farndale

Protein-Protein Interactions in Solution.

(Four lectures, continued)

Bioinformatics, Modelling and

Computational Biochemistry. (Two

lectures)

Proteomics and Functional Genomics. (Six

lectures)

Microscopy and Imaging. (Four lectures)

Research Project Colloquium

PROF. D. J. ELLAR AND DR P. DUPREE (Joint chairs)

Presentation of final reports. 12–13 May

Option Lectures

1. PROF. G. P. C. SALMOND AND OTHERS
Option Organiser: Prof. G. P. C. Salmond
Bacterial Virulence and Antimicrobial
Chemotherapy. (Fifteen lectures)
2. DR R. W. BROADHURST AND OTHERS
Option Organiser: Dr R. W. Broadhurst
Proteins, Nucleic Acids and Their
Interactions. (Fifteen lectures)
3. DR M. D. BRAND AND OTHERS
Option Organiser: Dr M. D. Brand
Mitochondria and Bioenergetics. (Fifteen
lectures)
4. DR P. DUPREE AND OTHERS
Option Organiser: Dr P. Dupree
Plant Cell and Molecular Biology. (Fifteen
lectures)
5. PROF. R. J. JACKSON AND OTHERS
Option Organisers: Prof. R. J. Jackson and
Dr T. Krude
Control of Gene Expression in Eukaryotes.
(Fifteen lectures in part joint with Part II
Zoology)
6. PROF. K. SIDDLE AND OTHERS
Option Organiser: Prof. K. Siddle
Medical Biochemistry. (Fifteen lectures)
7. DR F. HOLLFELDER AND OTHERS
Option Organiser: Dr F. Hollfelder
Enzyme Mechanisms and the Evolution of
Enzyme Function. (Fifteen lectures)

NATURAL SCIENCES TRIPOS, PART III (continued)

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BIOCHEMISTRY (continued)

8. DR A. A. GRACE AND OTHERS
Option Organiser: Dr A. A. Grace
Cardiovascular Molecular and Cellular
Biology. (Fifteen lectures)
9. DR A. M. TOLKOVSKY AND OTHERS
Option Organisers: Dr A. M. Tolkovsky
and Dr N. Affara
Oncogenes, Tumour Suppressor Genes and
Carcinogenesis. (Fifteen lectures in part
joint with Option E of Part II Pathology)
10. DR A. M. TOLKOVSKY AND OTHERS
Option Organiser: Dr A. M. Tolkovsky
Perspectives in Molecular Neurobiology.
(Fifteen lectures)
12. DR N. J. GAY AND OTHERS
Option Organiser: Dr N. J. Gay
Biotechnology. (Fifteen lectures)
13. DR D. M. CARRINGTON AND OTHERS
Option Organiser: Dr D. M. Carrington
Regulation of the Eukaryotic Cell Cycle.
(Fifteen lectures)
14. DR N. J. GAY AND OTHERS
Option Organiser: Dr N. J. Gay
Molecular Immunology. (Fifteen lectures)

Data handling classes

2.30–4.00, 29 Oct., 4 Nov.

Data handling classes

3–3.45, 21, 28 Jan.

CHEMISTRY

Course Organiser: Dr J. H. Keeler E-mail: James.Keeler@ch.cam.ac.uk

Students must register for the course in the *Department of Chemistry, Lensfield Road*, between 9 and 1 or 2 and 4 on Tu. 5 Oct.A booklet containing details of the times of the lecture courses will be given out on registration. Others interested in the lecture courses can obtain a copy of this booklet on application to the Course Organiser. This information is also available on the website, www-teach.ch.cam.ac.ukAll students must attend an introductory talk concerning the course at 10 a.m. on W. 6 Oct. in *Lecture Theatre 2*.All lectures will be given in the *Department of Chemistry, Lensfield Road* unless otherwise stated

EXPERIMENTAL AND THEORETICAL PHYSICS

Course Organiser: Prof. B. D. Simons E-mail: III-physics@phy.cam.ac.uk

Students must take **course L, M** and **T**. **Course N** is non-examinable.Students must offer three Major Options from the Michaelmas Term courses, together with three Minor Options chosen from the Lent Term courses (or two Minor Options if a Long Vacation Project has been offered). The material of **course L** is examined at the start of the term following that in which each block, Major Options and Minor Options, is given.The course will begin with a meeting on the first Wednesday of Full Term (6 Oct.) at 12.30 p.m. in the *Small Lecture Theatre*.Lectures are given at the *Cavendish Laboratory (West Cambridge)* unless otherwise statedThe lecture rooms are indicated as follows: (P) *Pippard Lecture Theatre*, (S) *Small Lecture Theatre*, (M) *Mott Seminar Room*.All Part III Mathematics courses are given in the *Centre for Mathematical Sciences, Clarkson Road* in the rooms indicated in parentheses.

Course L

Major Options

- PROF. P. B. LITTLEWOOD (P)
Principles of Quantum Condensed Matter Physics. Tu.
Th. Sa. 11
- PROF. A. M. DONALD (S)
Structure and Properties of Condensed Matter. M. W.
F. 9
- PROF. A. C. FABIAN, PROF. A. N. LASENBY AND PROF. M. J.
REES (P)
Gravitational Astrophysics and Cosmology. M. W. F. 11
- DR J. R. BATLEY (S)
Particle Physics. Tu. Th. Sa. 10
- DR K. F. PRIESTLEY, PROF. D. MCKENZIE AND DR A. DEUSS (S)
Physics of the Earth as a Planet. M. W. F. 10
- PROF. B. D. SIMONS (S)
Concepts in Theoretical Physics. Tu. Th. Sa. 12

Minor Options

- PROF. B. R. WEBBER (S)
Gauge Field Theory. Tu. Th. 9
- PROF. D. J. C. MACKAY (P)
Information Theory, Pattern Recognition and
Neural Networks. W. F. 11
- DR A. D. CHALLINOR AND DR C. DORAN (S)
General Relativity. M. W. 9
- PROF. M. A. PARKER (S)
The Frontiers of Particle Physics. M. 12, F. 9
- PROF. G. G. LONZARICH AND DR J. R. COOPER (M)
Interacting Electron Systems and
Superconductivity. M. W. 10
- PROF. M. PEPPER AND DR C. H. W. BARNES (M)
Quantum Electronics in Semiconductors.
M. 12, F. 9

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NATURAL SCIENCES TRIPOS, PART III (continued)

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EXPERIMENTAL AND THEORETICAL PHYSICS (continued)

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| <p>Not more than one of the following courses from Part III Mathematics (p. 147) may be offered for examination.</p> <p>PROF. N. S. MANTON Quantum Field Theory. Tu. Th. Sa. 9 (MR2)</p> <p>DR C. A. TOUT Structure and Evolution of Stars. M. W. F. 12 (MR15)</p> | <p>DR D. HASKO (M) Microelectronics and Semiconductor Materials. M. W. 9</p> <p>PROF. H. SIRRINGHAUS (M) Optoelectronics. Tu. Th. 10</p> <p>PROF. B. D. SIMONS (S) Phase Transitions and Collective Phenomena. Tu. Th. 12</p> <p>DR W. G. PROUD (S) Shock Waves and Explosives. W. F. 12</p> <p>DR E. M. TERENTJEV (M) Polymers and Colloids. Tu. Th. 9</p> <p>DR C. A. HANIFF (S) The Frontiers of Experimental Astrophysics. Tu. Th. 10</p> <p>DR S. THOMAS AND OTHERS (M) Medical Physics. Tu. Th. 12</p> <p>DR W. G. REES (S) Physics of Remote Sensing. M. 11 and F. 10</p> <p>PROF. M. C. PAYNE (P) Quantum Information. W. F. 12</p> <p>DR T. A. J. DUKE (S) Biological Physics. Tu. Th. 11</p> <p>DR S. VYAKARNAM AND OTHERS (S) Entrepreneurship. M. Th. 4</p> | <p>PROF. M. WARNER AND OTHERS (P) Examples Class in General Physics. Tu. F. 2-4 (Eight classes)</p> |
| <p>Course M</p> | <p>The following course from Part III Mathematics (p. 147) may be offered for examination.</p> <p>PROF. I. T. DRUMMOND Advanced Quantum Field Theory. Tu. Th. Sa. 11 (MR2)</p> | |
| <p>Course N</p> <p>DR M. MASSIMI (S) Philosophy of Physics. F. 2 (First four lectures)</p> <p>DR M. D. SEGALL (S) Modelling with Supercomputers. F. 2 (Last four lectures)</p> | <p>THE STAFF OF THE CAVENDISH LABORATORY Current Research Work in the Cavendish Laboratory. Open Days for students reading Part II or Part III Physics W. 2-5 The Open Days will start with introductory talks at 2 p.m. in the <i>Cavendish Laboratory</i> Research in the <i>Rutherford Building</i> (26 Jan. in <i>Small Lecture Theatre</i>) Research in the <i>TCM Group</i> (9 Feb. 2.15 in <i>TCM Seminar Room</i>)</p> | |
| <p>THE STAFF OF THE CAVENDISH LABORATORY (S) Themes of Cavendish Research. Tu. 2</p> <p>THE STAFF OF THE CAVENDISH LABORATORY Postgraduate Research Opportunities at the Cavendish. Reception on Th. 25 Nov. at 1 p.m. in the Foyer of the Pippard Lecture Theatre. Exhibition from 22 Nov. to 3 Dec.</p> | <p>PROF. M. S. LONGAIR AND OTHERS The same continued.</p> | <p>PROF. M. S. LONGAIR AND OTHERS The same continued.</p> |
| <p>Course T</p> <p>DR R. PADMAN AND OTHERS Project Work.</p> | <p>DR R. PADMAN AND OTHERS The same continued.</p> | <p>DR R. PADMAN AND OTHERS The same continued.</p> |

NATURAL SCIENCES TRIPOS, PART III (continued)

MICHAELMAS 2004

LENT 2005

EASTER 2005

GEOLOGICAL SCIENCES AND MINERAL SCIENCES

Students attend the seminar course in the Michaelmas Term and take three options in the Lent and Easter Term.

Seminar Course

A series of seminars will be run during the Michaelmas Term. Tu. 5 *Tilley Lecture Theatre*; Th. 12 *Harker Room*

Option M6 Diffraction, Electron Microscopy and Microanalysis

DR G. LUMPKIN, DR M. WELCH, DR S. A. T. REDFERN AND DR M. T. DOVE
 Convenor: Dr G. Lumpkin
 Lectures. M. F. 9 *Oxburgh Room*
 Practicals. M. F. 10–11.30 *IB Minerals Laboratory*

Option 6 Continental Tectonics and Mountains

DR J. A. JACKSON, DR N. HOVIUS AND A. N. OTHER
 Convenor: Dr J. A. Jackson
 Lectures. Tu. Th. 9 *Tilley Room*
 Practicals. Tu. 10–11.30, Th. 10–11.30
Petrology Laboratory

The same continued. (Eight revision sessions)

Option 7 Oceanic and Continental Margins

PROF. R. S. WHITE, DR J. HAINES AND DR D. M. PYLE
 Convenor: Prof. R. S. White
 Lectures. Tu. F. 2 *Harker Room*
 Practicals. Tu. F. 3–4.30 *Petrology Laboratory*

The same continued. (Eight revision sessions)

Option 8 Metamorphic and Igneous Processes

PROF. M. J. BICKLE, DR S. GIBSON AND DR A. GALY
 Convenor: Prof. M. J. Bickle
 Lectures. M. Th. 2 *Harker Room*
 Practicals. M. Th. 3–4.30 *Petrology Laboratory*

The same continued. (Eight revision sessions)

Option 9 Quaternary Oceans and Climate Change

PROF. I. N. MCCAVE, PROF. H. E. ELDERFIELD AND A. N. OTHER
 Convenor: Prof. H. E. Elderfield
 Lectures. M. 9, W. 2 *Harker Room*
 Practicals. M. 10–11.30, W. 3–4.30 *Petrology Laboratory*

The same continued. (Eight revision sessions)

Option 10 Ancient Ecosystems

PROF. S. CONWAY-MORRIS AND DR N. J. BUTTERFIELD
 Convenor: Prof. S. Conway-Morris
 Lectures. W. F. 9 *Harker Room*
 Practicals. W. F. 10–11.30 *Palaeontology Laboratory*

The same continued. (Eight revision sessions)

Option M4 Properties of Crustal Materials

DR S. A. T. REDFERN, DR M. WELCH AND DR S. A. HAYWARD
 Convenor: Dr S. A. T. Redfern
 Lectures. W. F. 9 *Oxburgh Room*
 Practicals. W. F. 10–11.30 *IB Minerals Laboratory*

The same continued. (Eight revision sessions)

Option M5 Computational Methods in Crystal Physics

DR E. ARTACHO AND DR C. J. PICKARD
 Convenor: Dr E. Artacho
 Lectures. M. 9, W. 2 *Oxburgh Room*
 Practicals. M. 10–11.30, W. 3–4.30 *IB Harker 2*

The same continued. (Eight revision sessions)

NATURAL SCIENCES TRIPOS, PART III (continued)

MICHAELMAS 2004

LENT 2005

EASTER 2005

MATERIALS SCIENCE AND METALLURGY

Course Organiser: Dr B. A. Glowacki E-mail: PartIII@msm.cam.ac.uk

A detailed timetable is available in the Department.

All lectures will be given in the *Austin Lecture Room*

PROF. A. L. GREER

C19 Thermal Analysis. (Four lectures)

DR P. A. MIDDLEY

C20 Electron Microscopy and Analysis. (Eight lectures)

DR M. G. BLAMIRE

C21 Optical, X-Ray and Neutron Techniques. (Six lectures)

PROF. C. J. HUMPHREYS

M1 Electron and Photons in Solids. (Twelve lectures)

DR S. TIN

M2 Solidification and Powder Processing. (Twelve lectures)

DR R. V. KUMAR

M3 Extraction and Recycling. (Twelve lectures)

DR W. J. CLEGG

M5 High Temperature Materials. (Twelve lectures)

DR N. D. MATHUR

M7 Electronic Ceramics. (Twelve lectures)

PROF. D. J. FRAY

M9 Ionic Materials. (Twelve lectures)

DR Z. H. BARBER

M12 Thin Films. (Twelve lectures)

DR E. R. WALLACH

M14 Joining. (Twelve lectures)**Speakers from Industry**

(26 Oct., 29 Nov.)

Visit to Industry

(Half day, 1 Dec.)

Examples Classes

Timetable available in the Department

Project

Teamwork project

Management Option

(Details to be announced.)

Language Option

(Two hours per week) M. 4-6 or Tu. 4-6 or W. 2-4 or Th. 2-4 or Th. 4-6 or F. 2-4

DR K. M. KNOWLES AND DR J. A. LITTLE

M4 Surface Engineering. (Twelve lectures)

PROF. A. H. WINDLE

M6 Polymeric Materials. (Twelve lectures)

PROF. A. L. GREER AND DR B. A. GLOWACKI

M8 Glasses and Nanomaterials. (Twelve lectures)

DR M. G. BLAMIRE

M10 Materials Aspects of Microdevices. (Twelve lectures)

DR R. E. CAMERON

M11 Biomaterials. (Twelve lectures)

DR B. A. GLOWACKI

M13 Magnetic and Superconducting Materials. (Twelve lectures)

DR G. T. BURSTEIN

M15 Corrosion. (Twelve lectures)

DR P. D. BRISTOWE

M16 Materials Modelling. (Twelve lectures)**Speakers from Industry**

(27 Jan., 3 Mar.)

Visit to Industry

(Half day, 15 Feb.)

Examples Classes

Timetable available in the Department

Project

Individual research project

Management Option

(Details to be announced.)

Language Option

The same continued.

PROF. D. J. FRAY AND OTHERS

Patent, Innovation and Entrepreneurship. (Four lectures)