

NATURAL SCIENCES TRIPOS, PART III

MICHAELMAS 2007

LENT 2008

EASTER 2008

ASTROPHYSICS

Course Website: <http://www.ast.cam.ac.uk/teaching/undergrad/partiii/partiiicourseguide03.html>

All lectures will be held in *the Centre for Mathematical Sciences meeting rooms (MR), Clarkson Road* except * which will be held at *the Institute of Astronomy, Madingley Road* and † in *the Pippard Lecture Theatre at the Cavendish Laboratory (West Cambridge)*

PROF. M. E. MCINTYRE

Fundamentals of Atmosphere-Ocean Dynamics. M. W. F. 9 MR14

DR J. M. STEWART

General Relativity. M. W. F. 10 MR2

DR F. K. PRIESTLEY, PROF. D. MCKENZIE AND DR A. DEUSS†

Physics of the Earth as a Planet. M. W. F. 10

PROF. J. C. B. PAPALOIZOU

Structure and Evolution of Stars. M. W. F. 12 MR11

PROF. N. G. TUROK

Cosmology. Tu. Th. S. 10 MR2

DR G. I. OGIIVIE

Astrophysical Fluid Dynamics. Tu. Th. S. 11 MR9.

DR J. S. SANDERS*

Introduction to Unix and Computing (5 lectures daily, starting Th. 4 October) 024 CTA

PROF. M. R. E. PROCTOR

Stellar and Planetary Magnetic Fields. M. W. F. 9 MR15

PROF. M. PETTINI

Physical Cosmology. M. W. F. 10 MR5

DR H. S. REALL

Black Holes. M. W. F. 11 MR9

PROF. N. PEAKE AND DR O. RATH-SPIVACK

Waves in Fluids. M. W. F. 11 MR14

DR E. P. S. SHELLARD

Advanced Cosmology Tu. Th. 9 MR9

PROF. J. E. PRINGLE

Accretion Discs. Tu. Th. 10 MR13

PROF. R. C. KENNICUTT

Galaxies. Tu. Th. S. 12 MR5

BIOCHEMISTRY

Course Organiser: Prof. C. J. Howe (email: ch26@mole.bio.cam.ac.uk)Course Website: <http://www.bioc.cam.ac.uk/teaching/partii/index.html>Lectures are given in the *Department of Biochemistry*

The course starts with an introductory lecture by PROF. HOWE at 9 a.m. on M. 1 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 and are held in the *Hopkins Building, Department of Biochemistry, Downing site*. Detailed time-tables will be posted 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. 1–5 Oct.

Research Technique Lectures Tu. Th. 5

DEPARTMENTAL STAFF AND OTHERS

Organiser: Dr R. W. Farndale

Molecular Biology. (Five lectures)

Bioinformatics overview. (One lecture)

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)

Research Project Symposium

PROF. C. J. HOWE AND DR T. R. HESKETH (Joint chairs)

Presentation of interim reports. 3–4 Dec.

Research Technique Lectures Tu. Th. 5

DEPARTMENTAL STAFF AND OTHERS

Organiser: Dr R. W. Farndale

Protein-Protein Interactions in Solution. (Five lectures)

Molecular Modelling and Computational Biochemistry. (Two lectures)

Proteomics and Functional Genomics. (Six lectures)

Microscopy and Imaging. (Four lectures)

Research Project Symposium

PROF. C. J. HOWE AND DR T. R. HESKETH (Joint chairs)

Presentation of final reports. 8–9 May

Options lectures

1. PROF. G. P. C. SALMOND AND OTHERS

Bacterial virulence and antimicrobial chemotherapy (Fifteen lectures)

Option Organiser: Prof. G. P. C. Salmond

2. DR R. W. BROADHURST AND OTHERS

Proteins, nucleic acids and their interactions (Fifteen lectures)

Option Organiser: Dr R. W. Broadhurst

3. DR M. D. BRAND AND OTHERS

Mitochondria and bioenergetics (Fifteen lectures)

Option organiser: Dr M. D. Brand

4. DR P. DUPREE AND OTHERS

Plant cell and molecular biology (Fifteen lectures)

Option organiser: Dr P. Dupree

NATURAL SCIENCES TRIPOS, PART III (continued)

MICHAELMAS 2007

LENT 2008

EASTER 2008

- | | | |
|--|---|--|
| | <p>5. PROF. C. W. J. SMITH AND OTHERS
Control of gene expression in eukaryotes
(Fifteen lectures in part joint with Part II Zoology.)
Option Organisers: Prof. C. W. J. Smith and Dr T. Krude</p> <p>6. PROF. K. SIDDLER AND OTHERS
Medical biochemistry. Obesity & diabetes - from genes to pathology (Fifteen lectures)
Option Organiser: Prof. K. Siddler</p> <p>7. DR F. HOLLFELDER AND OTHERS
Enzyme mechanisms and chemical biology (Fifteen lectures)
Option Organiser: Dr F. Hollfelder</p> <p>8. DR A. A. GRACE AND OTHERS
Systems approaches to modelling cardiovascular and other diseases (Fifteen lectures)
Option Organisers: Dr A. A. Grace and Dr R. W. Farndale</p> <p>9. DR T. R. HESKETH AND OTHERS
Oncogenes, tumour suppressor genes, apoptosis and carcinogenesis (Fifteen lectures in part joint with Option A (module 3) of Part II Pathology.)
Option Organisers: Dr T. R. Hesketh and Dr P. Edwards</p> <p>10. DR F. R. LIVESEY AND OTHERS
Stem cell biology (Fifteen lectures)
Option Organiser: Dr F. R. Livesey</p> <p>12. PROF. T. L. BLUNDELL AND OTHERS
Biotechnology (Fifteen lectures)
Option Organiser: Dr K. Lilley</p> <p>13. DR J. MATA AND OTHERS
Regulation of the eukaryotic cell cycle (Fifteen lectures)
Option Organiser: Dr J. Mata</p> <p>14. DR A. P. KELLY AND OTHERS
Molecular immunology (Fifteen lectures).
Option Organiser: Dr N. J. Gay</p> | |
|--|---|--|

CHEMISTRY

Course Organiser: Dr J. H. Keeler (email: jhk10@cam.ac.uk)
Course Website: www-teach.ch.cam.ac.uk

Students must register for the course in the *Department of Chemistry, Lensfield Road*, between 0900 and 1600 on Tu. 2 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.uk

All students must attend an introductory talk concerning the course at 10 a.m. on W. 3 Oct. in the *Wolfson Lecture Theatre*

All lectures will be given in the *Department of Chemistry, Lensfield Road* unless otherwise stated

NATURAL SCIENCES TRIPOS, PART III (continued)

MICHAELMAS 2007

LENT 2008

EASTER 2008

EXPERIMENTAL AND THEORETICAL PHYSICS

Departmental Contact: Dr Padman (email: III-physics@phy.cam.ac.uk)
 Course Website: www.phy.cam.ac.uk/teaching/

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, with the exception that the Lent Term Interdisciplinary courses “Materials, Electronics and Renewable Energy”, “Climate Change” and “Atmospheric Chemistry and Global Change” will be examined in June. Students may offer only one of “Climate Change” and “Atmospheric Chemistry and Global Change” for examination.

The course will begin with a meeting on the first Wednesday of Full Term (3 Oct.) at 12.30 p.m. in the *Small Lecture Theatre*

Lectures are given at the *Cavendish Laboratory (West Cambridge)* unless otherwise stated

The 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. H. SIRRINGHAUS (*P*)
 Advanced Quantum Condensed Matter Physics. Tu. Th. S. 11
- PROF. U. STEINER (*S*)
 Soft Matter. M. W. F. 9
- DR P. ALEXANDER AND PROF. A. C. FABIAN (*P*)
 Astrophysics and Cosmology. M. W. F. 11
- DR M. A. THOMSON (*S*)
 Particle Physics. Tu. Th. S. 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. P. B. LITTLEWOOD (*S*)
 Quantum Condensed Matter Field Theory. Tu. Th. S. 12
- DR M. P. HOBSON (*P*)
 Classical Field Theory and Gravitation. M. W. F. 12

Minor Options

- Twelve-lecture courses beginning in the second week of term.
- DR J. R. BATLEY (*S*)
 Gauge Field Theory. Tu. Th. 9 (beginning 24 Jan.)
- PROF. D. J. C. MACKAY (*P*)
 Information Theory, Pattern Recognition and Neural Networks. W. F. 11 (beginning 25 Jan.)
- PROF. M. A. PARKER (*S*)
 The Frontiers of Particle Physics. M. 12, F. 9 (beginning 25 Jan.)
- DR W. ALLISON (*S*)
 The Frontiers of Experimental Condensed Matter Physics. M. W. 9 (beginning 28 Jan.)
- PROF. G. G. LONZARICH (*M*)
 Superconductivity and Quantum Coherence. M. W. 10 (beginning 28 Jan.)
- DR C. H. W. BARNES (*S*)
 Quantum Information. Tu. Th. 12 (beginning 24 Jan.)
- PROF. R. T. PHILLIPS AND PROF. P. B. LITTLEWOOD (*S*)
 From Quantum Optics to Quantum Matter. M. 11 and F. 10 (beginning 25 Jan.)
- PROF. D. E. KHMELNITSKII (*P*)
 Phase Transitions and Collective Phenomena. W. F. 12 (beginning 25 Jan.)
- DR R. D. E. SAUNDERS (*S*)
 The Frontiers of Observational Astrophysics. Tu. F. 9 (beginning 25 Jan.)
- DR R. E. ANSORGE AND OTHERS (*S*)
 Medical Physics. W. F. 12 (beginning 25 Jan.)
- DR J. GUICK (*S*)
 Biological Physics. Tu. Th. 11 (beginning 24 Jan.)
- DR C. J. B. FORD (*M*)
 The Physics of Nanoelectronic Systems. M. 12, F. 9 (beginning 25 Jan.)
- DR S. VYAKARNAM AND OTHERS (*at the Judge Institute*)
 Entrepreneurship. M. Th. 4 (beginning 24 Jan.)
- PROF. SIR RICHARD FRIEND (*M*)
 Materials, Electronics and Renewable Energy (Interdisciplinary course). Tu.Th.12 (beginning 24 Jan.)
- PROF. H. GRAF AND OTHERS (*Tilley Room*)
 Climate Change (Interdisciplinary course). Tu. Th. 10
- PROF. R. JONES AND OTHERS (*Wolfson Lecture Theatre*)
 Atmospheric Chemistry and Global Change (Interdisciplinary course). Tu. Th. 9

NATURAL SCIENCES TRIPOS, PART III (continued)

MICHAELMAS 2007

LENT 2008

EASTER 2008

The following course from Part III Mathematics (p. 146) may be offered for examination.

DR D. TONG
Quantum Field Theory. Tu. Th. S. 9 (CMS MR2)

Course M**Course N**

THE STAFF OF THE CAVENDISH LABORATORY
Postgraduate Research Opportunities at the Cavendish.
Reception on Th. 22 Nov. at 1 p.m. in the
Foyer of the Pippard Lecture Theatre.
Exhibition from 19 Nov. to 29 Nov.

PROF. P. B. LITTLEWOOD AND OTHERS
Cavendish Physical Society seminars. W. 4.30
(Alternate weeks beginning 10 Oct.)

Course T

DR R. PADMAN AND OTHERS
Project Work.

The following course from Part III Mathematics (p. 146) may be offered for examination in place of **two** minor options.

PROF. H. OSBORN
Advanced Quantum Field Theory. Tu. Th. S. 11 (CMS MR3)

DR J. N. BUTTERFIELD (S)
Philosophy of Physics. F. 2 (Four lectures beginning 18 Jan.)

DR R. C. JENNINGS (S)
Ethics of Physics. F. 2 (Four lectures beginning 15 Feb.)

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 *Cavendish Laboratory*
Research in the *Rutherford Building* (30 Jan. in *Small Lecture Theatre*)
Research in the *TCM Group* (6 Feb. 2.15 in *TCM Seminar Room*)

PROF. P. B. LITTLEWOOD AND OTHERS
The same continued.

DR R. PADMAN AND OTHERS
The same continued.

PROF. M. WARNER AND OTHERS (P)
Examples Classes in General Physics. Tu. F. 2-4 (Nine classes, beginning 25 April, no class on 9 May)

PROF. P. B. LITTLEWOOD AND OTHERS
The same continued.

DR R. PADMAN AND OTHERS
The same continued.

NATURAL SCIENCES TRIPOS, PART III (continued)

MICHAELMAS 2007

LENT 2008

EASTER 2008

GEOLOGICAL SCIENCES AND MINERAL SCIENCES

Course Website: <http://www.esc.cam.ac.uk/new/v10/teaching/geology/ii-iii/courses.html>

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. 5 *Harker Room*

Option 1 Basin Dynamics

DR N. J. WHITE ET AL
 Convenor: Dr N. J. White
 Lectures. Tu. Th. 2 *Tilley Room*
Practicals. Tu. Th. 3-4.30 *Petrology Laboratory*

The same continued. (Eight revision sessions)

Option 2 Sedimentary Systems

DR N. H. WOODCOCK, DR N. HOVIUS, PROF. I. N. MCCAVE, DR K. MCNAMARA ET AL
 Convenor: Dr N. H. Woodcock
 Lectures. W. F. 9 *Harker Room*
Practicals. W. F. 10-11.30 *Petrology Laboratory*

The same continued. (Eight revision sessions)

Option 3 Metamorphic and Igneous Processes

DR T. J. B. HOLLAND, DR M. EDMONDS AND DR J. MACLENNAN
 Convenor: Dr T. J. B. Holland
 Lectures. M. W. 2 *Harker Room*
Practicals. M. W. 3-4.30 *Palaeontology Laboratory*

The same continued. (Eight revision sessions)

Option Climate Change (interdisciplinary course + G4)

PROF. H. ELDERFIELD, PROF. H. GRAF, PROF. J. DOWDESWELL, PROF. R. JONES
 Convenor: Prof. H. Elderfield
 Lectures. Tu. Th. 10, *Tilley Room*
Practicals. Tu. Th.. 11-12 + other, *Petrology Laboratory*

The same continued. (Eight revision sessions)

Option 5 Evolutionary Palaeobiology

DR N. J. BUTTERFIELD AND DR A. GOSWAMI
 Convenor: Dr N. J. Butterfield
 Lectures. M. 9, F. 2 *Harker Room*
Practicals. M. 10-11.30, F. 3-4.30 *Palaeontology Lab*

The same continued. (Eight revision sessions)

Option M1 Mineralogy of the Deep Earth

DR A. DEUSS, PROF. S. A. T. REDFERN, PROF. E. ARTACHO AND DR M. WELCH
 Convenor: Prof. M. A. Carpenter
 Lectures: Tu. F. 2 *Harker 2 room*
Practicals. Tu. F. 3-4.30 *IB Minerals Laboratory*

The same continued. (Eight revision sessions)

Option M3 Dynamics of atoms in Minerals

PROF. J. SCOTT, DR I. FARNAN AND PROF. S. A. T. REDFERN
 Convenor: Dr I. Farnan
 Lectures. Th. 2, F. 9 *Harker 2 room*
Practicals. Th. 3-4.30, F. 10-11.30 *IB Minerals Lab*

Option M2 Phase Transitions

PROF. M. T. DOVE AND PROF. M. A. CARPENTER
 Convenor: Prof. M. T. Dove
 Lectures. M. 9, W. 2 *Harker 2 room*
Practicals. M. 10-11.30, W. 3-4.30 *IB Minerals Laboratory*

The same continued. (Eight revision sessions)

NATURAL SCIENCES TRIPOS, PART III (continued)

MICHAELMAS 2007

LENT 2008

EASTER 2008

MATERIALS SCIENCE AND METALLURGY

Course Organiser: Dr W. J. Clegg (email: PartIII@msm.cam.ac.uk)
 Course Website: www.msm.cam.ac.uk/teaching/PtIII/

A detailed timetable is available on the Department website, as above.

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

DR N. A. RUTTER

T1 Thermal Analysis. (Four lectures)

PROF. P. A. MIDGLEY

T2 Electron Microscopy and Analysis. (Eight lectures)

DR R. STONE

T3 Optical, X-Ray and Neutron Techniques. (Six lectures)

DR J. A. ELLIOTT, DR P. D. BRISTOW AND PROF. H. K. D.

BHADESHIA

M2 Microstructural and Process Modelling. (Twelve lectures)

DR R. V. KUMAR

M3 Extraction and Recycling. (Twelve lectures)

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

M4 Surface Engineering. (Twelve lectures)

DR W. J. CLEGG

M5 Deformation Kinetics. (Twelve lectures)

PROF. M. G. BLAMIRE

M10 Device Materials and Nanotechnology. (Twelve lectures)

DR R. E. CAMERON

M11 Biomaterials. (Twelve lectures)

DR E. R. WALLACH

M14 Joining. (Twelve lectures)

PROF. G. T. BURSTEIN

M15 Corrosion and Protection. (Twelve lectures)**Speakers from Industry**

Details available from the Department website.

Visit to Industry

Details available from the Department website.

Project

Teamwork project.

Management and Language Options

Details available from the Department website.

DR P. A. MIDGLEY

M1 Electron and Photons in Solids. (Twelve lectures)

PROF. A. H. WINDLE

M6 Polymeric Materials and Carbon Nanotubes. (Twelve lectures)

DR N. D. MATHUR

M7 Electronic Ceramics. (Twelve lectures)

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

M8 Glasses and Nanomaterials. (Twelve lectures)

PROF. D. J. FRAY

M9 Ionic Materials. (Twelve lectures)

DR E. R. WALLACH

M12 Materials Energy and Sustainability (Twelve lectures)

DR B. A. GLOWACKI

M13 Magnetic and Superconducting Materials. (Twelve lectures)

DR P. D. BRISTOWE

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

Details available from the Department website.

Visit to Industry

Details available from the Department website.

Project

Individual research project.

Management and Language Options

Details available from the Department website.

Examples Classes

Timetable available on the Department website.