

NATURAL SCIENCES TRIPOS, PART III

MICHAELMAS 2009

LENT 2010

EASTER 2010

ASTROPHYSICS

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

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 Small Lecture Theatre in the Cavendish Laboratory (West Cambridge)*.

PROF. M. R. E. PROCTOR

Astrophysical Fluid Dynamics. M. W. F. 9, *MR5*

PROF. M. A. THOMSON†

Particle Physics. M. W. F. 10

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

Physics of the Earth as a Planet. M. W. F. 11

DR A. D. CHALLINOR AND PROF. J. D. BARROW

Cosmology. M. W. F. 10, *MR13*

DR O. RINNE

General Relativity. M. W. F. 11, *MR2*

DR J. J. ELDRIDGE

Structure and Evolution of Stars. M. W. F. 11, *MR13*

PROF. A. C. DAVIS

Quantum Field Theory. Tu. Th. S. 9, *MR2*

DR J. S. SANDERS*

Introduction to Unix and Computing. (Five lectures daily, starting Th. 8 October.) 2, *024, CTA*

DR M. C. WYATT

Planetary System Dynamics. M. W. F. 10, *MR4*

PROF. R. C. KENNICUTT

Galaxies. M. W. F. 11, *MR13*

DR H. S. REALL

Black Holes. M. W. F. 12, *MR9*

DR N. W. EVANS

Astrophysical Dynamics. M. W. F. 9, *MR12*

BIOCHEMISTRY

Course Organiser: Dr N. M. Standart (email: nms@mole.bio.cam.ac.uk)Course Website: <http://www.bioc.cam.ac.uk/teaching/partiii/index.html>Lectures are given in the *Department of Biochemistry*.

The course starts with an introductory lecture by DR STANDART at 9 a.m. on M. 5 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. 5–16 Oct.

Research Technique Lectures Tu. Th. 5

DEPARTMENTAL STAFF AND OTHERS

Organiser: Dr D. Nietlispach (pg-admin@bioc.cam.ac.uk)

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

DR N. M. STANDART AND DR T. R. HESKETH (Joint chairs)

Presentation of interim reports. 7–8 Dec.

Research Technique Lectures Tu. Th. 5

DEPARTMENTAL STAFF AND OTHERS

Organiser: Dr D. Nietlispach (pg-admin@bioc.cam.ac.uk)

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)

Options lectures

2. PROF. J. O. THOMAS AND OTHERS

Proteins, nucleic acids and their interactions (Fifteen lectures)

Option Organiser: Prof. J. O. Thomas

3. DR J. HIRST AND OTHERS

Mitochondria and bioenergetics (Fifteen lectures)

Option organiser: Dr J. Hirst

4. PROF. C. J. HOWE AND OTHERS

Plant cell and molecular biology (Fifteen lectures)

Research Project Symposium

DR N. M. STANDART AND DR T. R. HESKETH (Joint chairs)

Presentation of final reports. 6–7 May

NATURAL SCIENCES TRIPOS, PART III (continued)

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| | <p>Option organiser: Prof. C. J. Howe</p> <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. SIDDLE AND OTHERS
Medical biochemistry – Obesity and diabetes, from genes to pathology (Fifteen lectures)
Option Organiser: Prof. K. Siddle</p> <p>7. PROF. P. F. LEADLAY AND OTHERS
Enzyme mechanisms and chemical biology (Fifteen lectures)
Option Organiser: Prof. P. F. Leadlay</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>12. PROF. T. L. BLUNDELL AND OTHERS
Biotechnology (Fifteen lectures)
Option Organiser: Dr K. Lilley</p> <p>13. DR D. M. CARRINGTON AND OTHERS
Regulation of the eukaryotic cell cycle (Fifteen lectures)
Option Organiser: Dr D. M. Carrington</p> | |
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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. 6 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. 7 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 2009

LENT 2010

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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 offer 3 courses from **Major Options**, together with 3 courses from **Minor Options**. **Quantum Field Theory** may be substituted for one **Major Option**. A **Vacation project** and courses from **Interdisciplinary Topics**, **Nuclear Power Engineering** and **Further Work** may each be substituted for one **Minor Option**. **Advanced Quantum Field Theory** may be substituted for two **Minor Options**.

The courses from the **Major Options** and **Minor Options** and **Nuclear Power Engineering** are examined at the start of the term following that in which they are given. **Quantum Field Theory**, **Advanced Quantum Field Theory**, **Nuclear Materials** and courses from the **Interdisciplinary Topics** will be examined in June. The Entrepreneurship course from **Further Work** is continually assessed.

All students are recommended to attend the **Non-examinable courses**.

The course will begin with a meeting on the first Wednesday of Full Term (7 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.

Major Options

PROF. H. SIRRINGHAUS (S)

Advanced Quantum Condensed Matter Physics. T. Th. 11–12.30

PROF. U. STEINER (S)

Soft Matter. M. W. F. 12

PROF. A. C. FABIAN AND PROF. A. N. LASENBY (S)

Relativistic Astrophysics and Cosmology. Tu. Th. 10, F. 3

PROF. M. A. THOMSON (S)

Particle Physics. M. W. F. 10

PROF. K. F. PRIESTLEY, PROF. D. MCKENZIE AND DR A. DEUSS (S)

Physics of the Earth as a Planet. M. W. F. 11

PROF. P. B. LITTLEWOOD (S)

Quantum Condensed Matter Field Theory. M. W. F. 9

DR M. K. KÖHL AND DR Z. HADZIBABIC (S)

Atomic and Optical Physics. Tu. Th. 2–2.30

Minor Options

Twelve-lecture courses beginning in the second week of term, unless otherwise stated.

DR J. R. BATLEY (S)

Gauge Field Theory. Tu. Th. 9 (beginning 21 Jan.)

DR J. COLE (M)

The Frontiers of Experimental Condensed Matter Physics. W. 12, F. 10 (beginning 22 Jan.)

PROF. G. G. LONZARICH (M)

Superconductivity and Quantum Coherence. Tu. Th. 11 (beginning 21 Jan.)

PROF. B. D. SIMONS (M)

Phase Transitions and Collective Phenomena. Tu. Th. 12 (beginning 21 Jan.)

DR R. D. E. SAUNDERS (S)

The Frontiers of Observational Astrophysics. W. F. 11 (beginning 22 Jan.)

DR R. E. ANSORGE AND OTHERS (S)

Medical Physics. Tu. Th. 2 (beginning 21 Jan.)

DR J. GUCK (S)

Biological Physics. M. 12, W. 9 (beginning 25 Jan.)

DR C. J. B. FORD (M)

The Physics of Nanoelectronic Systems. M. W. 10 (beginning 25 Jan.)

PROF. M. A. PARKER AND PROF. G. EFSTATHIOU (S)

Particle Astrophysics. Tu. Th. 10 (16 lectures, beginning 21 Jan.)

DR P. ALEXANDER (S)

Formation of Structure in the Universe. M. W. 10 (16 lectures, beginning 25 Jan.)

DR M. ATATURE (M)

Nonlinear Optics and Quantum States of Light. M. F. 9 (beginning 22 Jan.)

Quantum Field Theory

The following course from Part III

Mathematics (p. 144) may be offered for examination.

DR A. C. DAVIS

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

NATURAL SCIENCES TRIPOS, PART III (continued)

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Advanced Quantum Field Theory	<p>The following course from Part III Mathematics (p. 145) may be offered for examination in place of two minor options.</p> <p>PROF. N. DOREY Advanced Quantum Field Theory. Tu. Th. S. 11 (CMS MR3)</p>	
Nuclear Materials	<p>The following course from Part III Materials Science (p. 208) may be offered for examination in place of one minor option.</p> <p>PROF. A. L. GREER (<i>venue to be confirmed</i>) Nuclear Materials. M. F. 9 (beginning 15 Jan)</p>	
Nuclear Power Engineering	<p>The following course from Part IIB Engineering (p. 129) may be offered for examination in place of one minor option.</p> <p>DR G. T. PARKS (<i>venue to be confirmed</i>) Nuclear Power Engineering. M. 12 W. 9 (beginning 18 Jan.)</p>	
Interdisciplinary Topics	<p>DR N. C. GREENHAM AND OTHERS (<i>S</i>) Materials, Electronics and Renewable Energy. (Interdisciplinary course). Tu. Th. 12 (beginning 14 Jan.)</p> <p>PROF. H. ELDERFIELD AND OTHERS (<i>Tilley LT</i>) Climate Change. (Interdisciplinary course). Tu. Th. 10 (beginning 14 Jan.)</p> <p>PROF. R. L. JONES AND OTHERS (<i>venue to be confirmed</i>) Atmospheric Chemistry and Global Change. (Interdisciplinary course). Tu. Th. 9 (beginning 14 Jan.)</p>	
Examples Classes		<p>DR J. R. BATLEY AND OTHERS (<i>P</i>) Examples Classes in General Physics. Tu. F. 2-4 (Nine classes, beginning 23 April, no class on 7 May)</p>
Non-examinable courses	<p>THE STAFF OF THE CAVENDISH LABORATORY Postgraduate Research Opportunities at the Cavendish. Reception on Th. 19 Nov. at 1 p.m. in the Foyer of the Pippard Lecture Theatre. Exhibition from 16 Nov. to 27 Nov.</p> <p>DR R. C. JENNINGS (<i>S</i>) Ethics of Physics. M. 11 (Four lectures beginning 18 Jan.)</p> <p>DR J. N. BUTTERFIELD (<i>S</i>) Philosophy of Physics. M. 11 (Four lectures beginning 15 Feb.)</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> (27 Jan. in <i>Small Lecture Theatre</i>) Research in the <i>TCM Group</i> (3 Feb. 2.15 in <i>TCM Seminar Room</i>)</p>	
<p>PROF. P. B. LITTLEWOOD AND OTHERS Cavendish Physical Society Seminars. W. 4.15 (Alternate weeks beginning 14 Oct.)</p>	<p>PROF. P. B. LITTLEWOOD AND OTHERS The same continued.</p>	<p>PROF. P. B. LITTLEWOOD AND OTHERS The same continued.</p>
<p>Further Work DR D. F. BUSCHER Long Vacation Project.</p>	<p>DR A. MUTHIRULAN AND OTHERS (<i>Mill Lane Lecture Theatre 6</i>) Entrepreneurship. M. Th. 4 (beginning 21 Jan.)</p>	
<p>Project Work PROF. C. G. SMITH AND OTHERS Project Work.</p>	<p>PROF. C. G. SMITH AND OTHERS The same continued.</p>	<p>PROF. C. G. SMITH AND OTHERS The same continued.</p>

NATURAL SCIENCES TRIPOS, PART III (continued)

MICHAELMAS 2009

LENT 2010

EASTER 2010

GEOLOGICAL SCIENCES AND MINERAL SCIENCES

Course Website: <https://camtools.caret.cam.ac.uk/> and
<http://www.esc.cam.ac.uk/teaching/geological-sciences> and
<http://www.esc.cam.ac.uk/teaching/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. 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 Earth's Critical Zones

DR A. GALY, DR N. HOVIUS, DR A. TURCHYN
 Convenor: Dr N. Hovius
 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

PROF. M. J. BICKLE, DR M. EDMONDS AND DR J. MACLENNAN
 Convenor: Prof. M. J. Bickle
 Lectures. M. W. 2 *Harker Room*
 Practicals. M. W. 3–4.30 *Palaeontology Laboratory*

The same continued. (Eight revision sessions)

IDP2 Interdisciplinary Course The Earth System and Climate Change

PROF. D. HODELL, DR A. PIOTROWSKI, DR L. SKINNER, DR A. TURCHYN
 Convenor: Prof. D. Hodell
 Lectures. Tu. Th. 10, *Tilley Room*
 Practicals. Tu. Th. 11–12.30, *Harker 1 Room*

The same continued. (Eight revision sessions)

Option 5 Evolutionary Palaeobiology

DR D. B. NORMAN
 Convenor: Dr D. B. Norman
 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 AND PROF. E. ARTACHO
 Convenor: Prof. S. A. T. Redfern
 Lectures: Tu. F. 2 *Harker 2 room*
 Practicals. Tu. F. 3–4.30 *IB Minerals Laboratory*

The same continued. (Eight revision sessions)

Option M2 Phase Transitions

PROF. M. T. DOVE, PROF. M. A. CARPENTER AND DR I. FARNAN
 Convenor: Prof. M. T. Dove
 Lectures. M. 9, W. 2 *Harker 2 room*
 Practicals. M. 10–11.30, W. 3–4.30 *IB Minerals Lab.*

The same continued. (Eight revision sessions)

Option M3 Dynamics of atoms in Minerals

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

The same continued. (Eight revision sessions)

NATURAL SCIENCES TRIPOS, PART III (continued)

MICHAELMAS 2009

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HISTORY AND PHILOSOPHY OF SCIENCE

Course Organisers: Dr T. Lewens (email: tml1000@cam.ac.uk) (Michaelmas Term) and Dr E. Robson (email: er264@cam.ac.uk) (Lent and Easter Terms)
 Course Website: www.hps.cam.ac.uk/students

All students must attend an introductory meeting at 2 p.m. on W. 7 Oct. in *Seminar Room 2, Department of History and Philosophy of Science.*

M.Phil./Part III Seminar in History, Philosophy and Sociology of Science, Technology and Medicine.
 W. 3 (*Seminar Room 1, Department of History and Philosophy of Science*)

The same continued.

The same continued.

MATERIALS SCIENCE AND METALLURGY

Course Organiser: Dr Z. H. Barber (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)

DR C. DUCATI

T2 Electron Microscopy and Analysis. (Eight lectures)

DR H. J. STONE

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

DR R. V. KUMAR

M3 Extraction and Recycling. (Twelve lectures)

DR W. J. CLEGG

M5 Deformation Kinetics. (Twelve lectures)

PROF. C. J. HUMPHREYS AND DR R. A. OLIVER

M10 Semiconductor Nanostructures for Devices (Twelve lectures)

PROF. R. E. CAMERON

M11 Biomaterials. (Twelve lectures)

DR J. H. DURRELL

M13 Magnetic and Superconducting Materials. (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

Group project

Management, Language and Computing Options

Details available from the Department website.

PROF. P. A. MIDGLEY

M1 Electron and Photons in Solids. (Twelve lectures)

Z. H. BARBER

M2 Thin Films. (Twelve lectures)

PROF. A. H. WINDLE

M6 Polymeric Materials and Carbon Nanotubes. (Twelve lectures)

PROF. A. K. CHEETHAM

M9 Functional Inorganic Materials (Twelve lectures)

DR E. R. WALLACH

M12 Materials: Energy and Sustainability. (Twelve lectures)

DR J. A. ELLIOTT

M16 Materials Modelling. (Twelve lectures)

PROF. A. L. GREER AND DR I. FARNAN

M17 Nuclear Materials. (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, Language and Computing Options

Details available from the Department website.

Example Classes

Details available from the Department website.