

NATURAL SCIENCES TRIPOS, PART IA

MICHAELMAS 2006

LENT 2007

EASTER 2007

BIOLOGY OF CELLS

Course Organiser: Dr F. Hollfelder (e-mail: iacells@mole.bio.cam.ac.uk) (Secretary: Mrs Christine Thulborn, tel. 766025)
 Course Website: www.bio.cam.ac.uk/teaching/cells

All lectures take place in the Babbage Lecture Theatre, New Museums Site, on M. W. F. 10

DR S. H. P. MADDRELL

The Living Cell. (Four lectures, beginning 6 Oct.)

DR H. R. MOTT

Macromolecules in the Cell. (Five lectures, beginning 16 Oct.)

DR J. M. DAVIES

Membranes: Molecular Superstructures. (Five lectures, beginning 27 Oct.)

DR A. SMITH AND DR J. GRIFFIN

The Chemistry of Life. (Ten lectures, beginning 8 Nov.)

PROF. D. K. SUMMERS

Hunting the Gene. (Seven lectures, beginning 19 Jan.)

DR M. WELCH

Genes in Action. (Six lectures, beginning 5 Feb.)

DR S. RUSSELL

The Genetic Revolution. (Six lectures, beginning 19 Feb.)

PROF. R. A. LASKEY

Cell Proliferation. (Five lectures, beginning 5 Mar.)

DR A. WEBB

Cell Signalling. (Six lectures, beginning 27 Apr.)

PROF. J. SMITH

Development. (Six lectures, beginning 11 May)

Practical work takes place in the *Zoological Laboratory* at 11–1 and 2–4 on M. or W. or F. For those doing Geology, practical times are 12–1 and 2–5; and for those doing Materials and Mineral Sciences times are 11–2 and 2–5. Students should register electronically for all IA biological practical courses.

CHEMISTRY

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

All lectures will be given in *Bristol-Myers Squibb Lecture Theatre, Department of Chemistry, Lensfield Road*, on Tu. Th. S. 10

DR P. D. WOTHERS

Shapes and Structures of Molecules. (Nineteen lectures)

DR W. P. NOLAN

Reactions and Mechanisms in Organic Chemistry. (Five lectures)

DR W. P. NOLAN

Reactions and Mechanisms in Organic Chemistry. (Nine lectures, continued)

DR J. H. KEELER

Energetics and Equilibria. (Nine lectures)

DR S. CLARKE

Kinetics of Reactions. (Six lectures)

DR P. D. WOTHERS

Chemistry of the Elements. (Twelve lectures)

Practical Chemistry: M. W. F. 10–12 or 11–1 and 2–5; Tu. Th. 11–1 and 2–5. Students will be registered for practicals by their Director of Studies or Tutor using the online registration system and will be assigned attendance on the morning or afternoon periods of one particular day in either odd weeks (beginning Th. 5 Oct.) or even weeks (beginning Th. 12 Oct.) of the Michaelmas Term. Students should go to the *Department of Chemistry, Lensfield Road*, between 8.30 and 4.30 on Tu. 3 Oct. to collect materials for the course.

ELEMENTARY MATHEMATICS FOR BIOLOGISTS

Course Organiser: Dr R. W. Broadhurst (email: rwb1002@cam.ac.uk)
 Course Website: www.phar.cam.ac.uk/teaching/EMB/

Elementary Mathematics for Biologists is intended for students who do not have A-level Mathematics.

Lectures will be given at 9 a.m. in the *Rayleigh Lecture Theatre, New Museums Site*

DR J. KOENIG

Introduction. (One lecture, 6 Oct.) F.

DR J. KOENIG

Algebra, Units and Graphs. (Three lectures, 11–25 Oct.) W.

DR J. ROGERS

Trigonometry, Oscillations and Waves. (Three lectures, 27 Oct.–3 Nov.) M. F.

PROF. P. A. MCNAUGHTON

Logarithms and Raising to Powers. (Two lectures, 6–10 Nov.) M. F.

DR R. W. BROADHURST

Calculus I. (Five lectures, 13–27 Nov.) M. F.

DR F. H. KING

Introduction to Computing and Excel. (Five sessions) (9–23 Oct.) M. F. 8.30–10 *Titan Rooms 1 and 2, New Museums Site*

THE LECTURERS

Examples classes (Five classes, 1 Nov.–29 Nov.) W. 9 *Large Classroom, Department of Pharmacology*

DR R. W. BROADHURST

Calculus II. (Six lectures, 19 Jan.–5 Feb.) M. F.

DR M. AITKEN

Statistics. (Ten lectures, 9 Feb.–12 Mar.) M. F.

DR M. AITKEN

Curve Fitting. (Two lectures, 27 Apr.–30 Apr.) M. F.

PROF. P. A. MCNAUGHTON

Frequency Analysis. (Two lectures, 4–7 May) M. F.

THE LECTURERS

Revision lectures. (Three lectures, 11–18 May) M. F.

THE LECTURERS

Examples classes (Eight classes, 24 Jan.–14 Mar.) W. 9 *Large Classroom, Department of*

THE LECTURERS

Examples classes (Two classes, 2, 9 May) W. 8.30–10 *PWF facility, Titan Rooms*, (Two classes, 16, 23 May) W. 9 *Large*

continued >

NATURAL SCIENCES TRIPOS, PART IA (continued)

MICHAELMAS 2006

LENT 2007

EASTER 2007

EVOLUTION AND BEHAVIOUR

Course Organiser: Dr K. Johnstone (e-mail: kj10@cam.ac.uk)
 Course Website: www.zoo.cam.ac.uk/degree/1aevol/

All lectures are held on Tu. Th. S. at 11 in the *Main Lecture Theatre, Department of Zoology*

DR W. A. FOSTER
 Introduction to Evolutionary Biology. (Four lectures, beginning 5 Oct.)
 DR L. HANDLEY AND DR R. WARE
 Evolutionary Genetics. (Eight lectures, beginning 14 Oct.)
 PROF. C. HOWE
 Early Events in Evolution. (Three lectures, beginning 2 Nov.)
 PROF. J. PARKER
 The Origin and Evolution of Plants. (Five lectures, beginning 9 Nov.)
 PROF. J. PARKER
 Diversification of Angiosperms. (Four lectures, beginning 21 Nov.)

PROF. M. E. AKAM
 The Organisation of Animal Diversity. (Six lectures, beginning 18 Jan.)
 DR R. S. K. BARNES
 Major Changes and Major Constraints in Animal Evolution. (Six lectures, beginning 1 Feb.)
 PROF. E. B. KEVERNE, PROF. A. DICKINSON AND DR J. DALY
 Evolution of Behaviour. (Twelve lectures, beginning 15 Feb.)

PROF. A. DICKINSON, DR M. PETRAGLIA AND PROF. S. BARON-COHEN
 Primate and Human Evolution and Behaviour. (Twelve lectures, beginning 26 Apr.)

Practical work: M. 12–5 (alternate weeks) or Tu. 12–5 (alternate weeks) *Department of Zoology*. Students should register electronically for all IA biological practical courses.

GEOLOGY

Course Co-ordinator: Dr N. Hovius (email: nhovius@esc.cam.ac.uk)
 Course Website: <http://www.esc.cam.ac.uk/new/v10/teaching/geology/ia/courses.html>
<http://camtools.caret.cam.ac.uk>

All lectures are given in the *Physiology Lecture Room, adjacent to the Department of Earth Sciences*, on M. W. F. 11

PROF. J. A. JACKSON, DR M. HOLNESS
 Earth as a Planet and Volcanic Processes (Twenty-four lectures)

DR D. B. NORMAN
 Palaeobiology (Twelve lectures)
 DR N. HOVIUS
 Earth Surface Processes and Sediments (Eleven lectures)
 DR N. H. WOODCOCK
 Introduction to Geology of Arran (One Lecture)

Field Course in Arran
 Party A. 15–23 March
 Party B. 22–30 March
 Party C. 29 March–6 April

DR N. H. WOODCOCK
 Britain's Geology: solving the jigsaw (Five lectures)
 PROF. J. A. JACKSON
 Planet Earth: The bigger picture (Seven lectures)

Practical work: There are three one-hour practicals to be taken per week: students choose one from each set (Set 1: F. 12, S. 10, M. 9, M. 10; Set 2: M. 12, Tu. 10, W. 9, W. 10; Set 3: W. 12, Th. 10, F. 9, F. 10). Students must register for practical classes in the *Department of Earth Sciences* on Tu, 3 Oct. between 9.30 and 1 or 2.30 and 5.

Long Vacation Course: A course on Geological Field Methods will be given 17 September–27 September 2007 for students intending to take a geological subject in Part IB.

MATERIALS AND MINERAL SCIENCES

Course Chairman: Prof. T. W. Clyne (e-mail: PartIA@msm.cam.ac.uk)
 Course Website: <http://www.msm.cam.ac.uk/Teaching/matmin1a/index.html>
<http://camtools.caret.cam.ac.uk>

This course is offered jointly by the Department of Materials Science and Metallurgy and the Department of Earth Sciences.

All lectures are held in the *Physiology Lecture Theatre*, on M. W. F. 12

DR I. J. FARNAN
 Organisation of Atoms in Crystals. (Eight lectures)
 PROF. E. ARTACHO
 Order and Disorder. (Eight lectures)
 DR J. L. DRISCOLL

DR N. A. RUTTER
 Microstructure. (Twelve lectures)
 PROF. T. W. CLYNE
 Mechanical Behaviour of Solids. (Twelve lectures)

PROF. A. L. GREER
 Biomaterials. (Six lectures)
 PROF. S. A. T. REDFERN
 Materials under Extreme Conditions. (Six lectures)

Practical work: Students will be assigned attendance for two two-hour periods each week, one on M. 2–4, Tu. 11–1, W. 10–12 or W. 2–4; and the other on Th. 11–1, F. 10–12, F. 2–4 or M. 10–12, starting Thursday 6 Oct. at 11 a.m.

Note: Students are advised to leave one or other of the periods Tu. 11–1 and Th. 11–1 available for the Computing Course for Physical Scientists (see p. 175).

NATURAL SCIENCES TRIPOS, PART IA (continued)

MICHAELMAS 2006

LENT 2007

EASTER 2007

MATHEMATICS

Course Organiser: (email: nst@maths.cam.ac.uk)
 Course Website: www.maths.cam.ac.uk/undergrad/NST/sched/

All lectures are held on Tu. Th. S. and will start at 9 a.m. promptly unless otherwise stated.

Course A

DR L. JARDINE-WRIGHT
 Mathematics I. *Chemical Laboratory, Lensfield Road*

DR F. H. KING

Computing Techniques and Applications*. Tu. S. 11
 (Six lectures, beginning 7 Nov.) or Th. S. 11 (Six
 lectures, beginning 9 Nov.) *Chemical Laboratory,
 Lensfield Road*

Course B

DR R. ANSORGE
 Mathematics I. *Arts School, Room A, Bene't Street*

DR F. H. KING

Computing Techniques and Applications*. Tu. S. 11
 (Six lectures, beginning 7 Nov.) or Th. S. 11 (Six
 lectures, beginning 9 Nov.) *Chemical Laboratory,
 Lensfield Road*

PROF. M. J. PERRY
 Mathematics II. *Chemical Laboratory,
 Lensfield Road*

DR F. H. KING

Assessed Exercise Briefing **. W. 4.30–6 (One
 lecture, 14 Mar.) *Chemical Laboratory,
 Lensfield Road*

PROF. P. H. HAYNES
 Mathematics II. *Arts School, Room A, Bene't
 Street*

DR F. H. KING

Assessed Exercise Briefing **. W. 4.30–6 (One
 lecture, 14 Mar.) *Chemical Laboratory,
 Lensfield Road*

DR H. E. MASON
 Mathematics III. (Twelve lectures) *Chemical
 Laboratory, Lensfield Road*

PROF. J. R. WILLIS
 Mathematics III. (Twelve lectures) *Arts
 School, Room A, Bene't Street*

* Candidates reading Evolution and Behaviour will be unable to attend the Computing Techniques and Applications course at the times shown. For these candidates, a special run of the course will be held from 9 to 4 on Th. 30 Nov. in *Titan Teaching Room 2, New Museums Site*.

** The assessed computing exercise will be taken into account by the Examiners. Note that the briefing takes place in the afternoon of the last day of normal lectures. The briefing consists of approximately half an hour of exercise administration followed by a regular lecture explaining the detailed requirements of the exercise. The assessments will take place in the afternoons of 7, 8, and 9 May 2007 in the *Foyer of the Babbage Lecture Theatre*. Further details will be issued during the briefing.

NATURAL SCIENCES TRIPOS, PART IA (continued)

MICHAELMAS 2006

LENT 2007

EASTER 2007

PHYSICS

Course Organiser: Prof. C. G. Smith (email: IA-physics@phy.cam.ac.uk)
 Course Website: www.phy.cam.ac.uk/teaching/

All lectures are on M. W. F. at 9

All lectures take place in the *Chemical Laboratory, Lensfield Road*.

DR P. J. DUFFETT-SMITH
 Principles of Relativity, Mechanics and Fields. (Nineteen lectures)

DR J. M. RILEY
 Electromagnetism, Oscillations and Waves. (Last three lectures, beginning 24 Nov.)

DR D. A. GREEN
 Experimental Physics. (Two lectures, W. 18 Oct. and W. 1 Nov.)

Laboratory Work

DR J. M. RILEY AND OTHERS
 Experimental Physics. M. or Tu. or Th. or F. 2–6 Students attend one afternoon every fortnight.

DR J. M. RILEY
 The same continued. (First sixteen lectures)
 PROF. C. G. SMITH
 Quantum Physics and the Physics of Large Systems. (Last eight lectures, beginning 26 Feb.)

DR G. A. C. JONES AND OTHERS
 The same continued.

PROF. C. G. SMITH
 The same continued (first ten lectures).
 DR P. J. DUFFETT-SMITH AND DR J. M. RILEY
 Revision Lectures (M. 21 May and W. 23 May)

PROF. J. A. C. BLAND AND OTHERS
 The same continued.

Laboratory Work takes place at the *Cavendish Laboratory (West Cambridge)*. All students must attend an introductory talk and register for **Laboratory Work** at 11.30 a.m. on W. 4 Oct. at the *Cavendish Laboratory*. The Laboratory may be approached by the Madingley Road, or via the Coton cycle and footpath. For cyclists and pedestrians the latter is strongly recommended. **Laboratory work is continuously assessed.**

PHYSIOLOGY OF ORGANISMS

Course Organiser: Prof. A. C. Crawford (email: ac151@cam.ac.uk)
 Course Websites: www.pdn.cam.ac.uk/teaching/part1a/1a_pool/
<http://camtools.caret.cam.ac.uk>

All lectures take place in the *Physiology Main Lecture Theatre* on Tu. Th. S. 12.

DR C. J. SCHWIENING
 Cells in Water. (Three lectures, 5–10 Oct.)

PROF. A. C. CRAWFORD
 Nerve, Synapse and Sense Organs. (Five lectures, 12–21 Oct.)

PROF. R. C. THOMAS
 The Structure and Function of Muscle. (Three lectures, 24–28 Oct.)

DR D. A. GIUSSANI
 Cardiovascular Physiology. (Three lectures, 31 Oct–4 Nov.)

DR MICHAEL J. MASON
 Animal O₂ Acquisition and Respiration. (Three lectures, 7–11 Nov.)

DR T. TIFFERT
 Animal Nutrient Acquisition. (Three lectures, 14–18 Nov.)

DR S. O. SAGE
 Osmoregulation in Animals. (Four lectures, 21–28 Nov.)

Practical Work W. or F. 12–1 and 2–5

DR MATTHEW J. MASON
 Homeostasis. (Five lectures, 18–27 Jan.)

DR J. M. HIBBERD
 Plant Physiology: an Introduction. (Four lectures, 30 Jan.–6 Feb.)

DR D. E. HANKE
 Plant Hormones. (Four lectures, 8–15 Feb.)

PROF. H. GRIFFITHS
 Plant Adaptations and Interactions. (Five lectures, 17–27 Feb.)

DR K. JOHNSTONE AND DR J. DAVIES
 Physiology of Plant – Microbe Interactions. (Six lectures, 1–13 Mar.)

The same continued.

DR D. J. TOLHURST
 Food Intake and Energy Balance. (Four lectures, 26 Apr.–3 May)

PROF. S. H. P. MADDRELL
 Integrative Animal Physiology. (Six lectures, 5–17 May)

DR C. J. SCHWIENING AND DR D. E. HANKE
 Comparing the Physiology of Plants and Animals. (Seminar, 19 May)

The same continued.

Practical Work: Students should register electronically for all IA biological practical courses.

NATURAL SCIENCES TRIPOS, PART IA (continued) AND PART IB

MICHAELMAS 2006

LENT 2007

EASTER 2007

QUANTITATIVE BIOLOGY

Course Organiser: Dr A. Manica (e-mail: a.manica@zoo.cam.ac.uk)
Course Website: www.quns.cam.ac.uk/qb/

Quantitative Biology is intended for those students who have studied Mathematics at GCE A-level or its equivalent. It does not provide a qualification for offering Mathematics in Part IB of the Natural Sciences Tripos.

New material, comprising the course syllabus will be presented in the Tuesday and Thursday lectures. Additional worked examples, together with revision to aid the transition from GCE A-level, will be presented in the Saturday lectures. There will be no more than six Saturday lectures during the Michaelmas and Lent terms and three in the Easter term.

Lectures will be held in the Large Lecture Theatre, Department of Plant Sciences, Computer practicals and Examples classes in the Titan Teaching Room, New Museum Site, unless otherwise stated.

Lectures. Tu. Th. 9

DR A. KLECZKOWSKI

Introduction to the Growth and Decline of Populations.
(Ten lectures, 5 Oct.–7 Nov.)

DR J. LUDLAM

Physiological Modelling. (Six lectures, 9–28 Nov.)

MR J. J. TRAPP

Introduction to Modelling of Interacting
Populations. (Seven lectures, 18 Jan.–
8 Feb.)

DR R. JOHNSTONE AND DR A. MANICA

Introduction to Statistical Methods. (Nine
lectures, 10 Feb.–13 Mar.)

DR R. JOHNSTONE

Optimisation and Game Theory. (Four
lectures, 26 Apr.–8 May)

DR J. GOG

Interacting Populations: Ecological
Applications. (Four lectures, 10–22 May)**Supplementary lectures.** S. 9

These lectures are to aid the transition from A level, and to present worked examples from the syllabus.

Examples classes and Computer Practicals Th. 2–3. 15, 3.30–4.45 or 4.45–6

Students should register electronically for all IA biological practical courses.

A. KLECZKOWSKI, DR J. LUDLAM AND DR R. JOHNSTONE

MR J. J. TRAPP, DR R. JOHNSTONE AND DR A. MANICA

DR R. JOHNSTONE, DR J. GOG

PART IB

ADVANCED PHYSICS

Course Organiser: Dr R. D. E. Saunders (e-mail: IB-advanced-physics@phy.cam.ac.uk)
Course Website: www.phy.cam.ac.uk/teaching/

Lectures are given in the Cockcroft Lecture Theatre, New Museums Site, unless otherwise stated.

DR C. J. B. FORD

Electromagnetism. Tu. Th. S. 9 (Not last two S.)

DR J. ELLIS

Classical Dynamics. (First ten lectures)
Tu. Th. S. 9

DR W. ALLISON

Statistical Physics. (Last nine lectures,
beginning 13 Feb.) Tu. Th. 9

DR W. ALLISON

The same continued. (First seven lectures)
Tu. Th. S. 9

Those not taking NST Part IB Mathematics:

PROF. S. WITHINGTON

Mathematics and Theoretical Physics. M. F. 11 Room B,
Arts School, Bene't Street

Those taking NST Part IB Mathematics:

PROF. M. WARNER

Methods of Mathematical Physics. (Twelve
lectures, beginning 5 Feb.) M. W. 9**Laboratory Work**

DR R. D. E. SAUNDERS

Systems and Measurement.

DR R. J. BUTCHER

Waves and Optics.

Laboratory Work takes place at the *Cavendish Laboratory (West Cambridge)*. The experimental laboratories are open M. 2–6, Tu. 10–6, Th. 10–6 and F. 2–6. Students will be allocated periods within these times. All students must attend an introductory talk and register for **Laboratory Work** at 2.30 p.m. on W. 4 Oct. at the *Cavendish Laboratory*. **Laboratory work is continuously assessed.**