NATURAL SCIENCES TRIPOS, PART IA

MICHAELMAS 2008 **LENT 2009** **EASTER 2009**

BIOLOGY OF CELLS

Course Organiser: Dr F. Hollfelder (email: 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.

PROF. S. H. P. MADDRELL
The Living Cell. (Four lectures, beginning 10 Oct.)
DR H. R. MOTT
Macromolecules in the Cell. (Five lectures, beginning 20 Oct.)
DR J. M. DAVIES
Membranes: Molecular Superstructures. (Five lectures, beginning 31 Oct.)
DR D. HANKE AND DR J. GRIFFIN
The Chemistry of Life. (Ten lectures, beginning 12 Nov.)

DR D. K. SUMMERS
Hunting the Gene. (Seven lectures, beginning 16 Jan.)
DR M. WELCH
Genes in Action. (Six lectures, beginning 2 Feb.)
DR S. RUSSELL
The Genetic Revolution. (Six lectures, beginning 16 Feb.)
PROF. R. A. LASKEY
Cell Proliferation. (Five lectures, beginning 2 Mar.)

PROF. N. BATE
Development. (Six lectures, beginning 24 Apr.)
DR A. WEBB
Cell Signalling. (Six lectures, beginning 8 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 11–12 and 2–5. Students will be registered electronically for all practical courses.

CHEMISTRY

Course Organiser: Dr J. H. Keeler (email: 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 N. BAMPOS
Chemistry of the Elements. (Twelve lectures)

Practical Chemistry: Weekdays 1100–1300 and 1400–1700. Students will be assigned (via the on-line system) attendance on the morning and afternoon periods of one particular day in either odd weeks (beginning Th. 9 Oct.) or even weeks (beginning Th. 16 Oct.) of the Michaelmas Term. Students should come to the *Department of Chemistry, Lensfield Road*, between 0830 and 1630 on Tu. 7 Oct. to collect course materials (handouts, practical class manuals etc).

COMPUTER SCIENCE

Course Organiser: Dr F. H. King (email: fhk1@cl.cam.ac.uk)
Course Website: www.cl.cam.ac.uk/teaching

Lectures are held in the *Arts School Room A, Bene't Street, on M. W. F. 10*, unless otherwise stated.

DR F. H. KING AND MISS C. H. NORTHEAST
Registration. Th. 11 (One lecture) *or* Th. 12 (One lecture, for those unable to attend at 11)
PROF. A. HOPPER
Introduction to Computer Science (One lecture)
PROF. L. C. PAULSON
Foundations of Computer Science (Fifteen lectures, beginning 13 Oct.)
DR P. M. SEWELL
Discrete Mathematics (Eight lectures, beginning 17 Nov.)

DR A. F. BLACKWELL
Software Design (Twelve lectures)
PROF. A. MYCROFT
Floating-Point Computation (Six lectures, beginning 13 Feb.)
DR R. K. HARLE
Programming Methods (Six lectures, beginning 27 Feb.)

DR F. M. STAJANO
Algorithms.
DR F. H. KING
Examination Briefing. W. 11 (One lecture, 20 May) *Hopkinson Lecture Room*

Practical work and afternoon classes

MR R. J. STIBBS, DR F. H. KING AND MISS C. H. NORTHEAST
Practical ML under Windows. Th. 2–5 (Two classes) *Lecture Theatre 1, William Gates Building*
PROF. L. C. PAULSON AND DR F. H. KING
Programming Practical Class. Th. 2–4 (Three fortnightly classes, beginning 23 Oct. *or* 30 Oct.) *Cockcroft Building, Floor 4*
PROF. A MYCROFT
How to Study Computer Science. Th. 5 (One lecture, 23 Oct.)
DR F. H. KING
Tick-Four Briefing. Th. 5 (One lecture, 30 Oct.) *Hopkinson Lecture Room*
DR T. TUERK
Help Sessions. Th. 5 (Three classes, beginning 6 Nov.) *Hopkinson Lecture Room*
DR R. J. DOWLING
How to Install Linux. Th. 5 (One lecture, 27 Nov.) *Hopkinson Lecture Room*

DR A. R. BERESFORD AND DR A. C. RICE
Programming in Java Class. Th. 10–12 *or* 12–2 *or* 2–4 *or* 4–6. *Cockcroft Building, Floor 4*

DR F. M. STAJANO AND DR F. H. KING
Practical Class. Th. 1–4. *Cockcroft Building, Floor 4*

Practical work: Initially students will be registered electronically for all practical courses. (Students will be registered for practical classes during the afternoon of 9 October.)

NATURAL SCIENCES TRIPOS, PART IA (continued)

MICHAELMAS 2008 **LENT 2009** **EASTER 2009**

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, 10 Oct.) F.
DR J. KOENIG
Algebra, Units and Graphs. (Three lectures, 15–29 Oct.) W.
DR J. ROGERS
Trigonometry, Oscillations and Waves. (Three lectures, 31 Oct.–7 Nov.) M. F.
PROF. P. A. MCNAUGHTON
Logarithms and Raising to Powers. (Two lectures, 10–14 Nov.) M. F.
DR K. LIPKOW
Calculus I. (Five lectures, 17–1 Dec.) M. F.
DR F. H. KING
Introduction to Computing and Excel. (Five sessions) (13–27 Oct.) M. F. 8.30–10 *Titan Rooms 1 and 2, New Museums Site*
THE LECTURERS
Examples classes (Five classes, 5 Nov.–3 Dec.) W. 9 *Large Classroom, Department of Pharmacology*

DRS R. W. MONTALVAO AND P. PIR
Calculus II. (Six lectures, 16 Jan.–2 Feb.) M. F.
DR J. W. DALLEY
Statistics. (Ten lectures, 6 Feb.–9 Mar.) M. F.
THE LECTURERS
Examples classes (Eight classes, 21 Jan.–11 Mar.) W. 9 *Large Classroom, Department of Pharmacology*

DR S. HLADKY
Curve Fitting. (Two lectures, 24 Apr.–27 Apr.) M. F.
PROF. P. A. MCNAUGHTON
Frequency Analysis. (Two lectures, 1–4 May) M. F.
THE LECTURERS
Revision lectures. (Three lectures, 8–15 May) M. F.
THE LECTURERS
Examples classes (Two classes, 29 Apr., 6 May) W. 8.30–10 *PWF facility, Titan Rooms*; (Two classes, 13, 20 May) W. 9 *Large Classroom, Department of Pharmacology*

Examples classes: Two of the exercises in each of the Michaelmas and Lent terms and one from the Easter term will be assessed with marks counting towards the examination.

EVOLUTION AND BEHAVIOUR

Course Organiser: Prof. A. Dickinson (email: ad15@cam.ac.uk)

DR W. A. FOSTER
Introduction to Evolutionary Biology. (Four lectures, 9–16 Oct.)
PROF. M. MAJERUS AND MS R. WARE
Evolutionary Genetics. (Eight lectures, 18 Oct.–4 Nov.)
PROF. C. HOWE
Early Events in Evolution. (Three lectures, 6–11 Nov.)
PROF. J. PARKER
The Origin and Evolution of Plants. (Five lectures, 13–22 Nov.)
DR B. J. GLOVER
Diversification of Angiosperms. (Four lectures, 25 Nov.–2 Dec.)

PROF. M. AKAM
The Organisation of Animal Diversity. (Six lectures, 15–27 Jan.)
DR D. BARNES
Major Changes and Major Constraints in Animal Evolution. (Six lectures, 29 Jan.–10 Feb.)
PROF. N. CLAYTON, PROF. E. B. KEVERNE AND PROF. A. DICKINSON
Evolution of Behaviour. (Twelve lectures, 12 Feb.–10 Mar.)

DR L. KNAPP, PROF. N. CLAYTON, DR W. MCGREW, DR J. STOCK AND PROF. S. BARON-COHEN
Primate and Human Evolution and Behaviour. (Twelve lectures, 23 Apr.–19 May)

Practical work: M. 12–5 (alternate weeks) or Tu. 12–5 (alternate weeks) *Department of Zoology.* Students will be registered electronically for all practical courses.

GEOLOGY

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

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 N. HOVIUS
Earth Surface Processes and Sediments (Eleven lectures)
PROF. S. CONWAY MORRIS
Palaeobiology (Twelve lectures)
DR N. H. WOODCOCK
Introduction to Geology of Arran (One Lecture)
Field Course in Arran
Party A. 12–20 March
Party B. 19–27 March
Party C. 26 March–3 April

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

Practical work: There are three one-hour practicals to be taken per week: students are allocated 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), starting Friday 12th Oct. ???? at 12 noon. Students will be registered electronically for all practical courses.
Long Vacation Course: A course on Geological Field Methods will be given 21 September–1 October 2009 for students intending to take a geological subject in Part IB.

NATURAL SCIENCES TRIPOS, PART IA (continued)

MICHAELMAS 2008 **LENT 2009** **EASTER 2009**

MATERIALS AND MINERAL SCIENCES

Course Organiser: Dr Z. H. Barber (email: PartIA@msm.cam.ac.uk)
Course Website: http://www.msm.cam.ac.uk/Teaching/matmin1a/index.html

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 R. J. HARRISON
Structure and Dynamics of the Material World. (Twelve lectures)
DR Z. H. BARBER
Materials for Devices. (Twelve lectures)

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

PROF. A. L. GREER
Biomaterials. (Six lectures)
PROF. E. ARTACHO
Materials under Extreme Conditions. (Six lectures)

Practical work: Two two-hour periods each week, one to be taken 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, 9 Oct. at 11 a.m. Students will be registered electronically for all practical courses.

MATHEMATICS

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

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

Course A

PROF. N. PEAKE
Mathematics I. *Chemical Laboratory, Lensfield Road*

DR F. H. KING
Computing Techniques and Applications*.
Tu. S. 11 (Six lectures, beginning 11 Nov.) *or* Th. S. 11 (Six lectures, beginning 13 Nov.) *Chemical Laboratory, Lensfield Road*

PROF. P. H. HAYNES
Mathematics II. *Chemical Laboratory, Lensfield Road*

DR F. H. KING
Assessed Exercise Briefing **. W. 4.45 –6 (One lecture, 4 Mar.) *Chemical Laboratory, Lensfield Road*

DR L. J. JARDINE-WRIGHT
Mathematics III. (Twelve lectures) *Chemical Laboratory, Lensfield Road*

Course B

DR A. D. CHALLINOR
Mathematics I. *Arts School, Room A, Bene't Street*

DR F. H. KING
Computing Techniques and Applications*. Tu. S. 11 (Six lectures, beginning 11 Nov.) *or* Th. S. 11 (Six lectures, beginning 13 Nov.) *Chemical Laboratory, Lensfield Road*

PROF. J. R. LISTER
Mathematics II. *Arts School, Room A, Bene't Street*
DR F. H. KING
Assessed Exercise Briefing **. W. 4.45–6 (One lecture, 4 Mar.) *Chemical Laboratory, Lensfield Road*

PROF. R. R. HORGAN
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 1 on Thursday 4 to Friday 5 December 2008 in *Titan Teaching Room 2, New Museums Site*.

** The assessed computing exercise will be taken into account by the Examiners. The briefing consists of a short period of administration followed by a regular lecture explaining the detailed requirements of the exercise. The assessments will take place in the afternoons of 4, 5 and 6 May 2009 in the *Foyer of the Babbage Lecture Theatre*. Further details will be issued during the briefing.

NATURAL SCIENCES TRIPOS, PART IA (continued)

MICHAELMAS 2008	LENT 2009	EASTER 2009

PHYSICS

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

All lectures take place in the *Bristol Myers Squibb Lecture Theatre, Chemical Laboratory, Lensfield Road* on M. W. F. at 9.

MICHAELMAS 2008	LENT 2009	EASTER 2009
DR P. J. DUFFETT-SMITH Principles of Mechanics, Relativity and Fields (nineteen lectures)		
DR G. A. C. JONES Electromagnetism, Oscillations and Waves (last three lectures, beginning 28 Nov.)	DR G. A. C. JONES The same continued. (first sixteen lectures)	PROF. C. G. SMITH The same continued. (first ten lectures)
DR D. A. GREEN Experimental Physics (Two lectures, W. 22 Oct. and W. 5 Nov.)	PROF. C. G. SMITH Quantum Mechanics and the Physics of Large Systems (last eight lectures, beginning 23 Feb.)	DR P. J. DUFFETT-SMITH AND DR G. A. C. JONES Revision Lectures (Two lectures, M. 18 May and W. 20 May)
Laboratory Work DR J. M. RILEY AND OTHERS Experimental Physics. M. *or* Tu. *or* Th. *or* F. 2–5.45 Students attend one afternoon every fortnight.	DR J. M. RILEY AND OTHERS The same continued.	DR J. M. RILEY 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. 8 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**. Students will be registered electronically for all practical courses.

PHYSIOLOGY OF ORGANISMS

Course Organiser: Dr. Matthew J. Mason (email: mjm68@cam.ac.uk)
Course Websites: www.pdn.cam.ac.uk/teaching/1a_poo.shtml
http://camtools.caret.cam.ac.uk/portal

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

MICHAELMAS 2008	LENT 2009	EASTER 2009
DR MATTHEW J. MASON An Introduction to Physiology. (Three lectures, 9–14 Oct.) DR D. J. TOLHURST Nerves, Synapses and Sense Organs. (Five lectures, 16–25 Oct.) DR S. O. SAGE Osmoregulation in Animals. (Four lectures, 28 Oct.–4 Nov.) DR H. P. C. ROBINSON Structure and Function of Muscle. (Three lectures, 6–11 Nov.) DR D. A. GIUSSANI Cardiovascular Physiology. (Three lectures, 13–18 Nov.) DR MICHAEL J. MASON Animal O_2 Acquisition and Respiration. (Three lectures, 20–25 Nov.) DR T. TIFFERT Animal Nutrient Acquisition. (Three lectures, 27 Nov.–2 Dec.)	DR MATTHEW J. MASON Homeostasis. (Five lectures, 15–24 Jan.) DR J. M. HIBBERD Plant Physiology: an Introduction. (Four lectures, 27 Jan–3 Feb.) TO BE ANNOUNCED Plant Hormones. (Four lectures, 5–12 Feb.) PROF. H. GRIFFITHS Plant Adaptations and Interactions. (Five lectures, 14–24 Feb.) DR J. DAVIES Physiology of Plant–Microbe Interactions. (Six lectures, 26 Feb.–10 Mar.)	DR A. J. MURRAY Food Intake and Energy Balance. (Four lectures, 23–30 Apr.) DR WALTER FEDERLE Integrative Animal Physiology. (Six lectures, 2–14 May) DR C. SCHWIENING AND DR J. M. HIBBERD Comparing the Physiology of Plants and Animals. (Seminar, 16 May)
Practical Work W. or F. 12–1 and 2–5	The same continued.	The same continued.

Practical Work: Students will be registered electronically for all practical courses.

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

MICHAELMAS 2008 **LENT 2009** **EASTER 2009**

QUANTITATIVE BIOLOGY

Course Organiser: Dr A. Manica: (email: a.manica@zoo.cam.ac.uk)

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.

DR N. CUNNIFFE
Introduction to the Growth and Decline of Populations. (Ten lectures, 9 Oct.–11 Nov.)

PROF. C. ELLINGTON
Physiological Modelling. (Six lectures, 13–2 Dec.)

MR J. J. TRAPP
Introduction to Modelling of Interacting Populations. (Seven lectures, 15 Jan.–5 Feb.)

DR R. JOHNSTONE AND DR A. MANICA
Introduction to Statistical Methods. (Nine lectures, 10 Feb.–10 Mar.)

DR R. JOHNSTONE
Optimisation and Game Theory. (Four lectures, 23 Apr.–5 May)

DR C. RUSSELL
Interacting Populations: Ecological Applications. (Four lectures, 7–19 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

Practical Work. Students will be registered electronically for all practical courses.

PART IB

ANIMAL BIOLOGY

Course Organiser: Dr R. Asher (email: r.asher@zoo.cam.ac.uk)
Course Website: www.zoo.cam.ac.uk/degree/1banimal/index.html

Candidates who intend to read Part II Zoology and who have not taken Evolution and Behaviour are recommended to attend one of the Easter Vacation Field Courses (if running). Details are posted in the Laboratory.

Lectures will take place at the *Main Lecture Theatre Department of Zoology* M. W. F. 11

PROF. N. B. DAVIES AND DR R. KILNER
Behaviour and Ecology. (Twelve lectures, beginning 10 Oct.)

PROF. S. B. LAUGHLIN AND PROF. M. BURROWS
Brain and Behaviour. (Twelve lectures, beginning 7 Nov.)

DR W. FEDERLE AND DR W. A. FOSTER
Adaptation and Evolution: Insect Biology. (Twelve lectures, beginning 16 Jan.)

PROF. J. A. CLACK AND DR R. ASHER
Adaptation and Evolution: Vertebrate Evolutionary Biology. (Twelve lectures, beginning 13 Feb.)

DR R. A. JOHNSTONE AND DR N. I. MUNDY
Evolutionary Principles. (Twelve lectures, beginning 22 Apr.)
Note the early start of this course.

Practical work: Students will be expected to do four hours practical work per week between 12 and 5 on Wednesdays *or* 12 and 5 on Thursdays. Students should register for all biological practical courses on W. 8 Oct. between 11.00 and 12.15 in *the Senate House*.