Last update 01 Oct. 12

Lectures proposed by the Board of the Faculty of Mathematics

MATHEMATICAL TRIPOS

Lectures proposed by the Board of the Faculty of Mathematics. Graduates of the University who are not reading for any University Examination may attend without payment any lectures proposed by the Faculty Board of Mathematics.

Part IA students are recommended to attend the induction session which will be held from 9.30 a.m. to 10.45 a.m. on Wednesday 3 October 2012, *in the Cockcroft Lecture Theatre.*

A meeting will be held for all Part IA students on Friday 10 May 2013 at 2.00 p.m. in *Mill Lane Room 3* to discuss examinations and examination techniques.

Note that the non-examinable course on **Topics in the History of Mathematics** will be of interest to all students reading the Mathematical Tripos. Full details are given below.

MICHAELMAS 2012	LENT 2013	EASTER 2013

PART IA

Lectures for Part IA of the Mathematical Tripos will be held in the *Cockcroft Lecture Theatre* unless otherwise stated.

Numbers and Sets
PROF. I. B. LEADER
M. W. F. 10

Vectors and Matrices
PROF. P. F. LINDEN
M. W. F. 11

Differential Equations
DR C. P. CAULFIELD
Tu. Th. S. 10

Groups
DR R. D. CAMINA
Tu. Th. S. 11

Analysis I
DR V. R. NEALE
M. W. F. 10

Dynamics and Relativity
PROF. D. TONG
M. W. F. 11

Vector Calculus
DR J. M. EVANS
Tu. Th. S. 10

Probability
PROF. F. P. KELLY
Tu. Th. S. 11

Optimisation*
DR F. A. FISCHER
M. W. F. 9, *Mill Lane Room 3* (Twelve lectures)

Variational Principles*
PROF. N. PEAKE
M. W. F. 10, *Mill Lane Room 3* (Twelve lectures)

Metric and Topological Spaces*
PROF. T. W. KÖRNER
M. W. F. 11, *Mill Lane Room 3* (Twelve lectures)

Computational Projects*
DR S. J. COWLEY
Tu. Th. 10 (Eight lectures)

The following courses are non-examinable

Introduction to Mechanics
DR S. T. C. SIKLOS
Tu. Th. 12, *Arts School, Room B, Bene't Street* (Twelve lectures)

The following course is non-examinable

Topics in the History of Mathematics: Renaissance to Enlightenment
DR P. BURSILL-HALL
W. F. 4, *Centre for Mathematical Sciences, MR3*

The following courses are non-examinable

Concepts in Theoretical Physics
DR D. D. BAUMANN
Tu. Th. 11 (Eight lectures)

Topics in the History of Mathematics: Ancients to the Middle Ages
DR P. BURSILL-HALL
W. F. 4, *Centre for Mathematical Sciences, MR3*

Topics in the History of 19th Century Mathematics
DR P. BURSILL-HALL ET AL.
W. F. 4, *Centre for Mathematical Sciences, MR3* (Eight lectures)

* Examined in Part IB of the Tripos

Mathematics with Physics Option:

Students taking this third option should attend Vectors and Matrices, Groups, Differential Equations, Analysis I, Vector Calculus and Probability from Part IA of the Mathematical Tripos, together with the lectures listed at

https://timetables.caret.cam.ac.uk/live/report.html#tripospartid=T0024001692011&courseids[]=T0024001692011006&year=2012/13&terms[]=Michaelmas&terms[]=Lent&terms[]=Easter

in Part IA Physics of the Natural Sciences Tripos. They will be required to do Physics practical work, and should attend at least the first lecture of Course B of the Computing Course for Physical Scientists.

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MATHEMATICAL TRIPOS, PART IB

MICHAELMAS 2012 | **LENT 2013** | **EASTER 2013**

Lectures for Part IB of the Mathematical Tripos will be held in *Mill Lane Lecture Rooms, Room 3* unless otherwise stated.

Methods
PROF. R. JOZSA
M. W. F. 9

Quantum Mechanics
DR E. LIM
M. W. 11

Linear Algebra
PROF. I. GROJNOWSKI
M. W. F. 12

Markov Chains
PROF. R. R. WEBER
Tu. Th. 10 (Twelve lectures)

Analysis II
DR P. A. RUSSELL
Tu. Th. S. 11

The following course is non-examinable

Topics in the History of Mathematics: Ancients to the Middle Ages
DR P. BURSILL-HALL
W. F. 4, *Centre for Mathematical Sciences, MR3*

Fluid Dynamics
PROF. M. G. WORSTER
M. W. 9

Geometry
DR J. RASMUSSEN
M. W. 11

Groups, Rings and Modules
PROF. I. B. LEADER
M. W. F. 12

Statistics
DR S. M. PITTS
Tu. Th. 9

Complex Analysis
PROF. I. SMITH
Tu. Th. 10

Electromagnetism
PROF. J. C. B. PAPALOIZOU
Tu. Th. 11

Numerical Analysis
DR S. J. COWLEY
Tu. Th. 12

Complex Methods
DR A. SHADRIN
W. F. 10

The following course is non-examinable

Topics in the History of Mathematics: Renaissance to Enlightenment
DR P. BURSILL-HALL
W. F. 4, *Centre for Mathematical Sciences, MR3*

Optimisation
DR F. A. FISCHER
M. W. F. 9 (Twelve lectures)

Variational Principles
PROF. N. PEAKE
M. W. F. 10 (Twelve lectures)

Metric and Topological Spaces
PROF. T. W. KÖRNER
M. W. F. 11 (Twelve lectures)

The following course is non-examinable

Topics in the History of 19th Century Mathematics
DR P. BURSILL-HALL ET AL.
W. F. 4, *Centre for Mathematical Sciences, MR3*

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MATHEMATICAL TRIPOS II

Lectures will be held in the Meeting Rooms (MR) of the *Centre for Mathematical Sciences, Clarkson Road*, unless otherwise stated.
A meeting will be held on Wednesday 12 June 2013 for finalists who may continue to Part III of the Tripos in 2013-14. The meeting will be held in *MR2 at the Centre for Mathematical Sciences* at 11.15 a.m.

C COURSES

MICHAELMAS 2012

Number Theory
PROF. J. M. E. HYLAND
M. W. F. 9, *MR2*

Dynamical Systems
PROF. P. H. HAYNES
Tu. Th. S. 9, *MR5*

Geometry and Groups
DR T. K. CARNE
Tu. Th. S. 10, *MR4*

Classical Dynamics
DR B. GROISMAN
Tu. Th. S. 12, *MR9*

Computational Projects
DR S. J. COWLEY
W. 10 October 2-3.30, *MR2* (One lecture)

LENT 2013

Topics in Analysis
PROF. B. J. GREEN
M. W. F. 9, *MR4*

Further Complex Methods
DR M. DUNAJSKI
M. W. F. 10, *MR4*

Coding and Cryptography
DR S. MARTIN
M. W. F. 11, *MR4*

Statistical Modelling
DR B. STRIPERUMBUDUR
M. W. F. 12, *MR5*

Mathematical Biology
DR J. R. GOG
Tu. Th. S. 9 , *MR4*

Cosmology
PROF. J. D. BARROW
Tu. Th. S. 12, *MR4*

EASTER 2013

D COURSES

MICHAELMAS 2012

Fluid Dynamics
PROF. E. J. HINCH
M. W. F. 9, *MR3*

Logic and Set Theory
PROF. P. T. JOHNSTONE
M. W. F. 10, *MR2*

Principles of Statistics
PROF. A. P. DAWID
M. W. F. 10, *MR4*

Numerical Analysis
DR C. B. SCHOENLIEB
M. W. F. 10, *MR9*

LENT 2013

Waves
PROF. E. J. HINCH
M. W. F. 9, *MR3*

Algebraic Topology
PROF. D. CALEGARI
M. W. F. 10, *MR3*

General Relativity
DR R. M. WILLIAMS
M. W. F. 11, *MR3*

Applications of Quantum Mechanics
PROF. N. DOREY
M. W. F. 12, *MR2*

EASTER 2013

Probability and Measure
PROF. J. R. NORRIS
M. W. F. 11, *MR3*

Partial Differential Equations
DR D. M. A. STUART
M. W. F. 11, *MR4*

Integrable Systems
PROF. A. ISERLES
M. W. 12, *MR4*

Representation Theory
DR S. J. WADSLEY
M. W. F. 12, *MR9*

Galois Theory
DR T. YOSHIDA
Tu. Th. S. 9, *MR3*

Principles of Quantum Mechanics
PROF. B. ALLANACH
Tu. Th. S. 10, *MR2*

Stochastic Financial Models
PROF. L. C. G. ROGERS
Tu. Th. S. 10, *MR5*

Differential Geometry
PROF. P. M. H. WILSON
Tu. Th. S. 11, *MR3*

Electrodynamics
PROF. G. W. GIBBONS
Tu. Th. 11, *MR4*

Graph Theory
PROF. A. G. THOMASON
Tu. Th. S. 12, *MR2*

Linear Analysis
DR A. ZSAK
M. W. F. 12, *MR3*

Optimisation and Control
PROF. R. R. WEBER
Tu. Th. 9, *MR3*

Riemann Surfaces
DR C. BIRKAR
Tu. Th. 9, *MR5*

Statistical Physics
DR U. SPERHAKE
Tu. Th. S. 10, *MR3*

Number Fields
DR T. A. FISHER
Tu. Th. 10, *MR4*

Asymptotic Methods
PROF. N. S. MANTON
Tu. Th. 11, *MR3*

Algebraic Geometry
PROF. A. J. SCHOLL
Tu. Th. S. 12, *MR3*

Applied Probability
DR N. BERESTYCKI
Tu. Th. S. 12, *MR9*

The following courses are non-examinable
Laboratory Demonstrations in Fluid Dynamics
DR S. B. DALZIEL
Four sessions, beginning 17 or 22 October, 2, *Fluids Laboratory*

Topics in the History of Mathematics: Ancients to the Middle Ages
DR P. BURSILL-HALL
W. F. 4, *MR3*

The following course is non-examinable
Topics in the History of Mathematics: Renaissance to Enlightenment
DR P. BURSILL-HALL
W. F. 4, *MR3*

The following course is non-examinable
Topics in the History of 19th Century Mathematics
DR P. BURSILL-HALL ET AL.
W. F. 4, *MR3*

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MATHEMATICAL TRIPOS PART III

All lectures are held at the *Centre for Mathematical Sciences, Clarkson Road* unless otherwise stated. There will be a meeting in *MR2* on Wednesday 3 October 2012 at 9.30 a.m. for all those who intend to offer courses in Part III.

There is a series of meetings for Part III students in MR2, Centre for Mathematical Sciences on Wednesdays at 4.15 p.m. Students are invited to refer to the Part III Handbook for more details.

MICHAELMAS 2012

Algebraic Geometry
DR C. BIRKAR
M. W. F. 9, *MR4*

Set Theory
DR O. KOLMAN
M. W. F. 9, *MR5*

Fluid Dynamics of the Environment
DR C. P. CAULFIELD AND DR J. A. NEUFELD
M. W. F. 9, *MR11*

Statistical Theory
DR R. J. SAMWORTH
M. W. 9, *MR13*

Commutative Algebra
PROF. N. I. SHEPHERD-BARRON
M. W. F. 10, *MR3*

Stochastic Networks
PROF. F. P. KELLY
M. W. F. 10, *MR5*

Numerical Solution of Differential Equations
PROF. A. ISERLES
M. W. F. 10, *MR11*

Kinetic Theory
DR A. EINAV AND DR C. W. KIM
M. W. F. 10, *MR13*

Astrophysical Fluid Dynamics
PROF. J. C. B. PAPALOIZOU
M. W. F. 10, *MR14*

LENT 2013

The Standard Model
DR M. B. WINGATE
M. W. F. 9, *MR2*

Schramm-Loewner Evolutions
DR N. BERESTYCKI
M. W. 9, *MR5*

Extremal Graph Theory
PROF. A. G. THOMASON
M. W. F. 9, *MR9*

Contemporary Sampling Techniques and Compressed Sensing
DR A. C. HANSEN
M. W. F. 9, *MR12*

Representation Theory
DR S. MARTIN
M. W. F. 9, *MR13*

Supersymmetry
PROF. B. ALLANACH
M. W. 10, *MR2*

Aspects of Analysis
DR D. J. H. GARLING
M. W. F. 10, *MR5*

Elliptic Curves
DR T. A. FISHER
M. W. F. 10, *MR9*

Fluid Dynamics of Climate
PROF. P. F. LINDEN AND DR J. R. TAYLOR
M. W. F. 10, *MR12*

EASTER 2013

Classical and Quantum Solitons
PROF. N. DOREY
M. Tu. Th. F. 10, *MR9*

General Relativity
DR H. S. REALL
M. W. F. 11, *MR2*

Advanced Financial Models
DR M. TEHRANCHI
M. W. F. 11, *MR5*

Additive Combinatorics
PROF. B. J. GREEN
M. W. F. 11, *MR9*

Slow Viscous Flow
PROF. J. R. LISTER
M. W. F. 11, *MR12*

Cosmology
DR D. D. BAUMANN
M. W. F. 12, *MR3*

Lie Algebras and their Representations
DR C. J. B. BROOKES
M. W. F. 12, *MR5*

Mathematics of Operational Research
DR F. A. FISCHER
M. W. F. 12, *MR13*

Biological Physics
PROF. R. E. GOLDSTEIN AND DR U. KEYSER
M. W. F. 12.10, *Small Lecture Theatre, Cavendish Laboratory*

Quantum Field Theory
PROF. A. C. DAVIS
Tu. Th. S. 9, *MR2*

Topics in Algebraic Number Theory
PROF. A. J. SCHOLL
Tu. Th. S. 9, *MR4*

Advanced Probability
DR A. SOLA
Tu. Th. S. 9, *MR9*

Approximation Theory
DR A. SHADRIN
Tu. Th. S. 9, *MR12*

Stochastic Calculus
DR M. TEHRANCHI
M. W. F. 10, *MR13*

Advanced Quantum Field Theory
PROF. H. OSBORN
M. W. F. 11, *MR2*

Applied Bayesian Statistics
PROF. D. SPIEGELHALTER
M. W. 11, *MR9*

Fluid Dynamics of Energy
PROF. A. W. WOODS
M. W. 11, *MR12*

Topics in Analytic Number Theory
DR R. HOUGH
M. W. F. 11, *MR13*

Spectral Geometry
DR D. BARDEN
M. W. F. 11, *MR14*

Topics in Representation Theory
PROF. I. GROJNOWSKI
M. W. F. 12, *MR9*

Nonparametric Statistical Theory
MR A. D. BULL
M. W. 12, *MR11*

Quantum Foundations
DR B. GROISMAN
M. W. 12, *MR12*

Origin and Evolution of Galaxies
PROF. M. G. HAEHNELT
M. W. F. 12, *MR13*

The Kakeya Universe and Incidence Problems in R^n
DR M. BATEMAN
M. W. F. 12, *MR14*

Topics in Group Theory
PROF. J. SAXL
Tu. Th. S. 9, *MR9*

Combinatorics
PROF. I. B. LEADER
Tu. Th. 10, *MR3*

Differential Geometry
PROF. M. DAFERMOS
Tu. Th. S. 10, *MR9*

Applied Statistics
DR R. J. EVANS
Th. 10, *MR11* (Eight lectures), Tu. 2-4, *CATAM Room* (Eight classes)

Distribution Theory and Applications
DR A. ASHTON
Tu. Th. 10, *MR12*

Structure and Evolution of Stars
DR C. A. TOUT AND DR B. DAVIES
Tu. Th. 10, *MR13*

Symmetries, Fields and Particles
PROF. N. S. MANTON
Tu. Th. S. 11, *MR2*

Introduction to Fourier Analysis
PROF. T. W. KÖRNER
Tu. Th. S. 11, *MR5*

Algebraic Topology
DR J. RASMUSSEN
Tu. Th. S. 11, *MR9*

Convex Optimisation with Applications in Image Processing
DR J. LELLMANN
Tu. Th. 11, *MR11*

Time Series and Monte Carlo Inference (I) +
PROF. A. P. DAWID
Tu. Th. 11, *MR12* (Eight lectures)

Computational Complexity
DR A. MONTANARO
Tu. Th. 11, *MR13*

Category Theory
DR J. GOEDECKE
Tu. Th. S. 12, *MR3*

Sound Generation and Propagation
DR E. BRAMBLEY
Tu. Th. 9, *MR12*

Binary Stars
DR C. A. TOUT
Tu. Th. 9, *MR13*

Optimal Investment
PROF. L. C. G. ROGERS
Tu. Th. 9, *MR14*

String Theory
PROF. P. K. TOWNSEND
Tu. Th. S. 10, *MR2*

Complex Manifolds
PROF. P. M. H. WILSON
Tu. Th. S. 10, *MR5*

Percolation and Related Topics
PROF. G. R. GRIMMETT
Tu. Th. 10, *MR9*

Design of Experiments
PROF. R. A. BAILEY
Tu. Th. 10, *MR11*

Dynamics of Astrophysical Discs
DR S. PAARDEKOOPER
Tu. Th. 10, *MR13*

Black Holes
PROF. G. W. GIBBONS
Tu. Th. S. 11, *MR2*

Computability and Logic
DR T. E. FORSTER
Tu. Th. S. 11, *MR5*

Applied Statistics
DR B. D. M. TOM
Tu. 11, *MR9* (Four lectures and four classes)

Solidification of Fluids
PROF. M. G. WORSTER
Tu. Th. 11, *MR11*

Perturbation Methods
PROF. N. PEAKE AND PROF. J. M. RALLISON
Tu. Th. S. 12, *MR5*

Actuarial Statistics
DR S. M. PITTS
Tu. Th. 12, *MR13*

Image Processing - Variational and PDE Methods
DR C. B. SCHOENLIEB
Tu. Th. 11, *MR12*

Applications of Differential Geometry
DR M. DUNAJSKI
Tu. Th. 12, *MR5*

Polar Oceans and Climate Change
PROF. P. WADHAMS
Tu. Th. 12, *MR12*

Biostatistics
DR P. TREASURE
Tu. Th. 12, *MR13* (Fourteen lectures)
PROF. S. BIRD ET AL.
Th. 4-6, *MR13* (Five sessions, beginning 17 January)

Quantum Computation
PROF. R. JOZSA
Th. S. 9, *MR11*

Time Series and Monte Carlo Inference (II) +
PROF. A. P. DAWID
Th. S. 11, *MR9* (Eight lectures)

The following course is non-examinable

Laboratory Demonstrations in Fluid Dynamics
DR S. B. DALZIEL
W. 2, *Fluids Laboratory*

+ These two courses constitute the sixteen-hour course in Time Series and Monte Carlo Inference

Last update 02 Oct. 12

FACULTY OF MATHEMATICS

COURSES INTENDED FOR GRADUATES (non-examinable)

MICHAELMAS 2012

Elliptic Partial Differential Equations
DR B. KRUMMEL
M. W. F. 11, *MR11*

Lattice Models in Probability and Statistical Mechanics
DR Z. LI
Tu. 12, *MR11*

Higher Dimensional Black Holes and Numerical General Relativity
DR P. FIGUERAS AND DR U. SPERHAKE
Tu. 12, *MR12* (Eight lectures)

Philosophical Foundations of Field Theory
DR N. BOUATTA AND DR N. TEH
Tu. 4.30-6, *MR4*

Philosophy of Classical and Quantum Mechanics
DR J. N. BUTTERFIELD AND DR A. CAULTON
Th. 4.30-6, *MR4* (Eight lectures)

Topics in Theoretical Physics
PROF. D. TONG
F. 4, *MR9* (Lectures beginning 12 October)

LENT 2013

Applications of Functional Integration
DR D. M. A. STUART
M. W. 9, *MR11*

Complex Multiplication
DR T. YOSHIDA
M. W. F. 9, *MR14*

Realisability and Topos Theory
PROF. P. T. JOHNSTONE
M. W. F. 10, *MR11*

Novel Techniques for Boundary Value Problems
PROF. A. FOKAS
M. W. 10, *MR14*

Optimal Transport
DR A. EINAV
M. W. F. 11, *MR11*

Symplectic Geometry
DR Y. LEKILI
M. W. F. 12 , *MR4*

Products of Random i.i.d. Matrices
DR P. VARJÚ
Tu. Th. 9, *MR15*

Granular Flows
DR N. M. VRIEND
Tu. Th. 10, *MR12* (Eight lectures)

Sporadic and Related Groups
DR R. PARKER
Tu. Th. 10, *MR14*

Hodge Structures and Mumford-Tate Groups
DR C. VIAL
Tu. Th. 11, *MR4*

EASTER 2013

Topics in Algebraic Surfaces
DR M. SHEN
M. W. F. 10 , *MR12*

Crystalline Cohomology and Applications
DR N. OJEDA BAR
M. Tu. Th. F. 11, *MR9*

Concentration of Measure
DR N. BERESTYCKI AND DR R. NICKL
M. W. 11-1, *MR12* (Lectures from 6 May to 29 May)

Ornstein Theory +
DR Y. GUTMAN
Tu. Th. 12, *MR14* (Eight lectures)

Applications of General Relativity
MISS I. M. M. BORZYM
Tu. Th. 11, *MR13*

Ornstein Theory +
DR Y. GUTMAN
Tu. Th. 11, *MR14*

Analysis of Operators
DR A. J. WASSERMANN
Tu. Th. S. 12, *MR11*

Derived Algebraic Geometry
DR J. P. PRIDHAM
Tu. Th. S. 12, *MR14*

Philosophy of Classical and Quantum Mechanics
DR J. N. BUTTERFIELD AND DR A. CAULTON
Th. 4.30-6, *MR4* (Eight lectures)

+ The twenty-four-hour course in Ornstein Theory is scheduled over the Lent (sixteen hours) and Easter terms (eight hours).