

# MATHEMATICAL SCIENCES

## DIVISION OF MATHEMATICAL AND PHYSICAL SCIENCES

### Lecture List for Michaelmas Term 2022

There may be late changes and amendments to this Lecture List. For an up-to-date version, please check the Mathematical Institute Website: <https://www.maths.ox.ac.uk/members/students/lecture-lists>

This version updated

Events shown on this list are generally one hour long unless stated otherwise.

<i>Subject</i>	<i>Lecturer</i>	<i>Time*</i>	<i>Place</i>
<b>GRADUATE SEMINARS</b>			
Algebra Seminar	Prof. Dan Ciubotaru	T.14	Mathematical Institute, L6
Algebraic Geometry Seminar	Prof. Frances Kirwan, Prof Balazs Szendroi	T.3:30–5	Mathematical Institute, C3
Applied Topology Seminar		F.3	Mathematical Institute, L5
Combinatorics Seminar	Prof. Alex Scott	T.2-3:15	Mathematical Institute, L5
Computational Mathematics and Applications	Prof. Patrick Farrell, Prof. Yuji Nakatsukasa, Prof. Nick Trefethen	Th.2	Mathematical Institute, L3
Fridays@4	Prof. Sam Cohen	F.4	Mathematical Institute, L1
Functional Analysis	Prof. Stuart White	T.4	Mathematical Institute, C1
Geometric Group Theory	Prof. Dawid Kielak	T.3	Mathematical Institute, L2 [week 1], L3 [week 8], L5 [week 2-7]
Geometry and Analysis	Prof Frances Kirwan and Prof. Guillem Cazassus	M.2.00–3.30	Mathematical Institute, L5
Geophysical and Non-linear Fluid Dynamics	Prof. Peter Read and Prof. Irene Moroz	T.2:15	Atmospheric Physics
Industrial and Applied Mathematics		Th.12	Mathematical Institute, L1
Junior Geometry Seminar	George Cooper, Andres Ibanez Nunez, Gilles Englebert	Th.15 (even weeks)	Mathematical Institute, L5
Junior Topology and Group Seminar	Adele Jackson	W.16	Mathematical Institute, L4
Logic	Prof. Jonathan Pila, Prof Ehud. Hrushovski, Prof. Jochen Koenigsmann	Th.11.30	Mathematical Institute, L3
Mathematical and Computational Biology	Prof. Philip Maini, Dr Peter Minary	F.2	Mathematical Institute, L3
Mathematical Geoscience	Prof Ian Hewitt	F.2 (even weeks up to week 8)	Mathematical Institute, L5
Networks Seminar	Erik Hormann	T.2	Mathematical Institute, C3
Nonlinear PDE	Prof. Gui-Qiang Chen	Th.3:15–5:45	Mathematical Institute, C4
Number Theory	Akshat Mudgal and Otto Viktor Overkamp	Th.4	Mathematical Institute, L5
Numerical Analysis Internal Seminar	Prof. Patrick Farrell, Prof. Yuji Nakatsukasa, Prof. Nick Trefethen	T.2 (weeks 1,3, 5, 7)	Mathematical Institute, L3
Oxford Data Science Seminar	Prof. Melanie Weber	M.2	Mathematical Institute, L4
Partial Differential Equations Seminar	Prof. Luc Nguyen, Prof. Andrea Modino, Prof. Qian Wang	M.4.30	Mathematical Institute, L5

PDE CDT lunchtime seminar	Dr Ben Fehrman and Eliana Fausti	Th.12	Mathematical Institute, L6
Quantum Field Theory/Relativity	Dr Keith Hannabuss , Dr Florence Tsou	T.12–1:30 (odd weeks up to week 7)	Mathematical Institute, L5
Random Matrix Theory Seminar	Prof Jon Keating	T.3.30	Mathematical Institute, L6
Stochastic Analysis and Mathematical Computational Finance Seminar	Prof. Terry Lyons and Prof. Rama Cont	M.3.30	Mathematical Institute, L1
String Theory		M.12:45-2	Mathematical Institute, L1
Topology Seminar	Prof. Andre Henriques, Prof. Dawid Kielak and Prof. Andras Juhasz	M.3:30	Mathematical Institute, L5
Wolfson Centre for Mathematical Biology Journal Club	Prof. Philip Maini	M.12	Mathematical Institute, L6
<b>GRADUATE WORKSHOPS</b>			
<b>WORKSHOPS</b>			
Industrial and Interdisciplinary Workshops	Prof. Chris Breward and Yixuan Sun	F.9.45-11.15	Mathematical Institute, L6
Probability Workshops	Prof. Christina Goldschmidt	M.12	Mathematical Institute, L1 (weeks 1-4 1), L2 (weeks 5-8)
<b>ADVANCED CLASSES</b>			
CDT in Random Systems Faculty Talks		T.4:14-5	Mathematical Institute, L4
Geometric Group Theory	Prof. Dawid Kielak	T.15	Mathematical Institute, L3
Logic	Prof Ehud Hrushovski	Th.14:30	Mathematical Institute, C2
Topology	Prof. Andre Henriques	M.11	Mathematical Institute, C1
<b>TAUGHT COURSE CENTRE</b>			
<p>The Taught Course Centre is a collaboration between the Mathematics Departments at the Universities of Bath, Bristol, Imperial, Oxford and Warwick. It aims to offer approximately 25 graduate level courses over the academic year. Access grid technology will be used so that audiences in all five universities can participate in the lectures. Graduate students should register in advance in order to attend the lectures. For more information about the Taught Course Centre, and for their lecture timetable, please see the website at <a href="https://www.maths.ox.ac.uk/groups/tcc">https://www.maths.ox.ac.uk/groups/tcc</a></p>			
<b>EPSRC CDT in MATHEMATICS OF RANDOM SYSTEMS</b>			
Simulation methods and Stochastic Algorithms	Prof Christoph Reisinger	T.2-4	Mathematical Institute, L4
Theories of Deep Learning	Prof. Jared Tanner	T.11-13	Mathematical Institute, L3
<b>M.Sc IN MATHEMATICAL AND COMPUTATIONAL FINANCE</b>			
Financial Computing with C++	Dr Greg Gyurko	W.2-4	Microsoft Teams
Financial Derivatives	Prof. Hanqing Jin	M.9-11	Mathematical Institute, L5
Numerical Methods	Prof. Blanka Horvath	M.11, T.11	Mathematical Institute, L5
Statistics and Financial Data Analysis	Dr Katia Babbar	Th.10-12	Mathematical Institute, L3
Stochastic Calculus	Prof Michael Monoyios	T.9-11	Mathematical Institute, L4
<b>M.Sc IN MATHEMATICAL AND THEORETICAL PHYSICS</b>			
Advanced Philosophy of Physics	Prof Adam Caulton	W.11	Department of Philosophy Rad. Hum. Ryle Rm

Advanced Quantum Theory	Prof. John Chalker	W.14-16	Department of Physics, Dennis Sciama
Algebraic Geometry	Prof. Damian Rossler	M.10 [L6] F.10 [L4]	Mathematical Institute, L4, L6
Algebraic Topology	Prof. Andre Henriques	Th.15, F.15	Mathematical Institute, L4
Differentiable Manifolds	Prof. Dominic Joyce	W.14, Th.14	Mathematical Institute, L4
General Relativity I	Prof. Chris Couzens	M.17, T.17	Mathematical Institute, L4
Groups and Representations	Prof. Andre Lukas	T.10-12 Th.14	Department of Physics, Lindemann
Kinetic Theory	Dr Paul Dellar, Prof. Binney, Prof. Alex Schekochihin.	M.10-11.30 (all weeks apart from week 2) M.15-17 M.16-18 (weeks 1, 2,3,78)	Department of Physics, Lindemann
Lie Algebras	Prof. Kevin McGerty	T.14, Th.14	Mathematical Institute, C1
Networks	Prof. Peter Grindrod	W.11 F.15	Mathematical Institute, L3
Numerical Linear Algebra	Prof. Yuji Nakatsukasa	T.15 [L1/L3] Th.17 [L2]	Mathematical Institute, L1 (Tuesday weeks 1, 2, 4, 6 and 8), L3 (Tuesday weeks 3, 5 and 7), L2 (Thursdays)
Perturbation Methods	Prof. Ruth Baker	Th. 12 [L2] F.12 [L4]	Mathematical Institute, L2, L4
Quantum Field Theory	Prof. John Wheeler	M.14 T.15 W.9	Department of Physics, Lindemann
Quantum Processes in Hot Plasma	Prof. Peter Norreys	T.2-4	Department of Physics, DWB Fisher Room
Topics in Fluid Mechanics	Prof. Graham Benham	Th.16, F.16	Mathematical Institute, L6
Topological Quantum Theory	Prof Steve Simon	F.10-12	Department of Physics, DWB Fisher Room
<b>M.Sc IN MATHEMATICAL MODELLING AND SCIENTIFIC COMPUTING</b>			
<b>CORE</b>			
A1 Supplementary Applied Mathematics	Prof Helen Byrne	T.16-18 (weeks 1-4)	Mathematical Institute, L1 (Week 2), L2 (weeks 1,3,4)
A1 Applied PDEs	Prof. Andreas Muench	F. 9-11	Mathematical Institute, L2
Prof Endre Suli	W.10 [L3] Th.10 [L4]	Mathematical Institute, L3, L4	Prof Endre Suli
B1 Numerical Linear Algebra	Prof. Yuji Nakatsukasa	T.15 [L1/L3] Th.17 [L2]	Mathematical Institute, L1 (Tuesday weeks 1, 2, 4, 6 and 8), L3 (Tuesday weeks 3, 5 and 7), L2 (Thursdays)
Mathematical Modelling	Prof Helen Byrne	W.16-18 (weeks 5-8) [L4] Th. 14 (weeks 5-8) [L2]	Mathematical Institute, L2, L4

Additional Skills	Dr Kathryn Gillow	W.1-3 (weeks 1-6, 8)	Mathematical Institute, L3
Practical Numerical Analysis	Dr Kathryn Gillow	Th.9 (weeks 1-4)	Mathematical Institute, L6
<b>SPECIAL TOPICS</b>			
Approximation of Functions	Prof. Nick Trefethen	M.16, T.16	Mathematical Institute, L4
Further Mathematical Biology	Prof. Ruth Baker	Th. 11 [L4] F.11 [L3]	Mathematical Institute, L3, L4
Integer Programming	Prof. Raphael Hauser	M.2, T. 2	Mathematical Institute, L2
Mathematical Geoscience	Prof. Irene Moroz	T.11 [L6] W.11 [L5]	Mathematical Institute, L5,L6
Mathematical Physiology	Prof. Ian Griffiths	M.15, Th.15	Mathematical Institute, C1
Networks	Prof. Peter Grindrod	W.11 F.15	Mathematical Institute, L3
Perturbation Methods	Prof. Ruth Baker	Th. 12 [L2] F.12 [L4]	Mathematical Institute, L2, L4
Stochastic Differential Equations	Prof. Massimiliano Gubinelli	M.11, W.9	Mathematical Institute, L5
Theories of Deep Learning	Prof. Jared Tanner	T.11-13	Mathematical Institute, L3
Topics in Fluid Mechanics	Prof. Graham Benham	Th.16, F.16	Mathematical Institute, L6
Viscous Flow	Prof. Chris Breward	M. 10 [L4] T.10 [L6]	Mathematical Institute, L4, L6
<b>M.Sc IN MATHEMATICAL SCIENCES</b>			
The lectures below for MATHEMATICS Part C/OMMS all apply.			
<b>M.Sc IN MATHEMATICS AND THE FOUNDATIONS OF COMPUTER SCIENCE</b>			
An Introduction to LaTeX			Recorded videos available via <a href="https://courses.maths.ox.ac.uk/">https://courses.maths.ox.ac.uk/</a>
<b>Section A: Mathematical Foundations</b>			
<b>Schedule I</b>			
Algebraic Topology	Prof. Andre Henriques	Th.15, F.15	Mathematical Institute, L4
Analytic Topology	Dr Robin Knight	M.14 [L3] W.15 [L2]	Mathematical Institute, L2, L3
Category Theory	Prof. Dan Ciubotaru	M.12-2	Mathematical Institute, L3 Weeks 2-4, L2 Weeks 5-8
Differentiable Manifolds	Prof. Dominic Joyce	W.14, Th.14	Mathematical Institute, L4
Introduction to Representation Theory	Prof. Konstantin Ardakov	W.9, Th, 9	Mathematical Institute, L3
Lie Algebras	Prof. Kevin McGerty	T.14, Th.14	Mathematical Institute, C1
Model Theory	Prof Jochen Koenigsmann	W.9, Th.9	Mathematical Institute, L4
Topology and Groups	Prof. Andras Juhasz	M.12, Th.12	Mathematical Institute, L4
<b>Schedule II</b>			
Algebraic Geometry	Prof. Damian Rossler	M.10 [L6] F.10 [L4]	Mathematical Institute, L4, L6
Homological Algebra	Prof. Kobi Kremnizer	M.15 [L4] T.16 [L3]	Mathematical Institute, L3, L4
Infinite Groups	Prof. Cornelia Drutu	Th.11, F.11	Mathematical Institute, L5

<b>Section B: Applicable Theories</b>			
<b>Schedule I</b>			
Quantum Processes and Computation	Prof. Aleks Kissinger	M.12, W.12, F.12	Department of Computer Science, Tony Hoare Room (RHB)
Graph Theory	Prof. Paul Balister	M.11, W.11	Mathematical Institute, L1
Information Theory	Prof. Hanqing Jin	Th.3, F.3	Mathematical Institute, L1
Integer Programming	Prof. Raphael Hauser	M.2, T. 2	Mathematical Institute, L2
<b>Schedule II</b>			
Additive Combinatorics	Prof. Akshat Mugdal	T.10 Th.10	Mathematical Institute, L5
Advanced Complexity Theory	Prof. Rahul Santhanam	M.11, W.11, F.11 (weeks 1-4)	Department of Computer Science, Tony Hoare Room (RHB)
Bayesian Statistical Probabilistic Programming	Prof. Gunes Baydin	T. 15 F. 15	Department of Computer Science, Tony Hoare Room (RHB)
Combinatorics	Prof. Alex Scott	T.9, F.9	Mathematical Institute, L5
Computational Learning Theory	Prof Varun Kanade	M.16 T.16 Th.16	Department of Computer Science, LTB
Networks	Prof. Peter Grindrod	W.11 F.15	Mathematical Institute, L3
<b>MATHEMATICS</b>			
<b>Prelims</b>			
Introduction to University Mathematics	Prof. Ian Hewitt	M.10, Th.10 (week 1)	Mathematical Institute, L1
Introduction to Complex Numbers	Prof. Andy Wathen	T.9, Th. 11 (week 1)	Mathematical Institute, L1
Linear Algebra I	Prof. Andy Wathen	T.9 (weeks 2-8) Th. 11 (weeks 2-8)	Mathematical Institute, L1
Geometry	Prof. Derek Moulton	M. 10 (weeks 2-8) T. 10 (weeks 1-8)	Mathematical Institute, L1
Analysis I	Dr Vicky Neale	Th.10 (weeks 2-8) F.10 (weeks 1-8)	Mathematical Institute, L1
Introductory Calculus	Prof. Emmanuel Breuillard	W: 9 (weeks 1-8, except week 3) Th: 9 (weeks 1-8, except week 3) W.12 (week 2) Th.2 (week 2)	Mathematical Institute, L1
Probability	Prof. Matthias Winkel	M.9 (weeks 1-8) F.9	Mathematical Institute, L1
Computational Mathematics	Prof. Nick Trefethen	W. 10 (weeks 1-2)	Mathematical Institute, L1
Fridays@2		F.2	Mathematical Institute, L1
<b>Part A</b>			
Linear Algebra	Prof. Andrew Dancer	M.9, T.9	Mathematical Institute, L2

Differential Equations 1	Prof. Melanie Rupflin	W.11, Th.11	Mathematical Institute, L2
Metric Spaces and Complex Analysis	Prof. Dmitry Belyaev & Prof. Panos Papazoglou	M.11, T.11, W.12, Th.11	Mathematical Institute, L2
Probability	Prof Matthias Winkel	W.9, Th.9	Mathematical Institute, L2
Quantum Theory	Dr Mark Mezel	M.11, T.11	Mathematical Institute, L2
Fridays@2		F.2	Mathematical Institute, L1
Statistics Department Options information session		F.11 (week 5)	Department of Statistics, LG.01
<b>Part B</b>			
B1.2 Set Theory	Prof. Jonathan Pila	M.3, T.3 W.3 (Weeks 2 and 4) No Week 3 lectures	Mathematical Institute, L2
B2.1 Introduction to Representation Theory	Prof. Konstantin Ardakov	W.9, Th, 9	Mathematical Institute, L3
B3.1 Galois Theory	Prof. Konstantin Ardakov	M.10, T.10	Mathematical Institute, L3
B3.2 Geometry of Surfaces	Prof. Dominic Joyce	T. 12 [L2] W. 10 [L4]	Mathematical Institute, L2, L4
B3.5 Topology and Groups	Prof. Andras Juhasz	M.12, Th.12	Mathematical Institute, L4
B4.1 Functional Analysis I	Prof. Luc Nguyen	W. 12, F. 12	Mathematical Institute, L3
B4.3 Distribution Theory and Analysis of PDEs	Prof. Jan Kristensen	T.11 [L4] Th. 10 [L6]	Mathematical Institute, L4, L6
B5.2 Applied PDEs	Prof. Andreas Muench	F. 9-11	Mathematical Institute, L2
B5.3 Viscous Flow	Prof. Chris Breward	M. 10 [L4] T.10 [L6]	Mathematical Institute, L4, L6
B5.5 Further Mathematical Biology	Prof. Ruth Baker	Th. 11 [L4] F.11 [L3]	Mathematical Institute, L3, L4
B6.1 Numerical Solution of Differential Equations I	Prof Endre Suli	W.10 [L3] Th.10 [L4]	Mathematical Institute, L3, L4
B6.3 Integer Programming	Prof. Raphael Hauser	M.2, T. 2	Mathematical Institute, L2
B7.1 Classical Mechanics	Dr Nick Jones	W.2, Th.2	Mathematical Institute, L5
B8.1 Probability, Measure and Martingales	Prof. Jan Obloj	M.9, T.9	Mathematical Institute, L3
B8.4 Information Theory	Prof. Hanqing Jin	Th.3, F.3	Mathematical Institute, L1
B8.5 Graph Theory	Prof. Paul Balister	M.11, W.11	Mathematical Institute, L1
BO1.1 History of Mathematics	Dr Christopher Hollings	T.11-1 (C1 Week 1, L1 all other weeks)	Mathematical Institute, L1
BSP: Structured Projects	Dr Cath Wilkins	M.4 (week 1 only)	Mathematical Institute, C1
SB1.1 Applied Statistics	Dr Neil Laws & Prof. Frank Windmeijer	M: 3 (weeks 1-7) [LG.01] T. 3 (weeks 1-6) [LG.01] Practicals: 2-3:30 (weeks 3, 5, 8) [LG.02]	Department of Statistics, LG.01, LG.02
SB2.1 Foundations of Statistical Inference	Prof George Deligiannidis	T. 2, Th.2	Department of Statistics, LG.01

SB3.2 Statistical Lifetime Models	Prof. David Steinsaltz	M.10 W.9	Department of Statistics, LG.01
101 Early Modern Philosophy: Descartes	Prof Paul Lodge	W.10	Examination Schools (Room 6)
101 Early Modern Philosophy: Hume	Prof Peter Kail	F.10	Examination Schools (Room 6)
102 Knowledge and Reality: Epistemology	Prof. Bernhard Salow	Th.10	Examination Schools (East School)
122 Philosophy of Mathematics	Prof. Alex Paseau	M. 10	Radcliffe Humanities Lecture Room
Fridays@2		F.2	Mathematical Institute, L1
*An Introduction to LaTeX			Recorded videos available via <a href="https://courses.maths.ox.ac.uk/">https://courses.maths.ox.ac.uk/</a>
<b>Part C / OMMS</b>			
C1.1 Model Theory	Prof Jochen Koenigsmann	W.9, Th.9	Mathematical Institute, L4
C1.3 Analytic Topology	Dr Robin Knight	M.14 [L3] [Week 3 in L4] W.15 [L4] [Week 1 in L2]	Mathematical Institute, L2, L4
C2.1 Lie Algebras	Prof. Kevin McGerty	T.14, Th.14	Mathematical Institute, C1
C2.2 Homological Algebra	Prof. Kobi Kremnizer	M.15 [L4] T.16 [L3]	Mathematical Institute, L4, L3
C2.4 Infinite Groups	Prof. Cornelia Drutu	Th.11, F.11	Mathematical Institute, L5
C2.7 Category Theory	Prof. Dan Ciobotaru	M.12-2	Mathematical Institute, L3 Weeks 2-4, L2 Weeks 5-8
C3.1 Algebraic Topology	Prof. Andre Henriques	Th.15, F.15	Mathematical Institute, L4
C3.3 Differentiable Manifolds	Prof. Dominic Joyce	W.14, Th.14	Mathematical Institute, L4
C3.4 Algebraic Geometry	Prof. Damian Rossler	M.10 [L6] F.10 [L4]	Mathematical Institute, L4, L6
C3.6 Modular Forms	Prof. Alan Lauder	W.12 [L4] Th.12 [L5]	Mathematical Institute, L4, L5
C3.10 Additive Combinatorics	Prof. Akshat Mugdal	T.10 Th.10	Mathematical Institute, L5
C4.1 Further Functional Analysis	Prof. Stuart White	W.10 [L5] F.12	Mathematical Institute, L6
C4.3 Functional Analytic Methods for PDEs	Prof. Luc Nguyen	Th.10-12	Mathematical Institute, C1
C4.8 Complex Analysis: Conformal Maps and Geometry	Prof. Qian Wang	W.16, Th.16	Mathematical Institute, C1
C5.2 Elasticity and Plasticity	Prof. Jim Oliver	M.9, T.9	Mathematical Institute, L6
C5.4 Networks	Prof. Peter Grindrod	W.11 F.15	Mathematical Institute, L3
C5.5 Perturbation Methods	Prof. Ruth Baker	Th. 12 [L2] F.12 [L4]	Mathematical Institute, L2, L4
C5.7 Topics in Fluid Mechanics	Prof. Graham Benham	Th.16, F.16	Mathematical Institute, L6

C5.11 Mathematical Geoscience	Prof. Irene Moroz	T.11 [L6] W.11 [L5]	Mathematical Institute, L5,L6
C5.12 Mathematical Physiology	Prof. Ian Griffiths	M.15, Th.15	Mathematical Institute, C1
C6.1 Numerical Linear Algebra	Prof. Yuji Nakatsukasa	T.15 [L1/L3] Th.17 [L2]	Mathematical Institute, L1 (Tuesday weeks 1, 2, 4, 6 and 8), L3 (Tuesday weeks 3, 5 and 7), L2 (Thursdays)
C6.3 Approximation of Functions	Prof. Nick Trefethen	M.16 [L4] T.16 [L5]	Mathematical Institute, L4, L5
C6.5 Theories of Deep Learning	Prof. Jared Tanner	T.11-13	Mathematical Institute, L3
C7.1 Theoretical Physics	Prof. Andrei Starinets & Prof. John Chalker	W. 14 Th. 9-11	Department of Physics, Dennis Sciamia
C7.5 General Relativity I	Prof. Chris Couzens	M.17, T.17	Mathematical Institute, L4
C8.1 Stochastic Differential Equations	Prof. Massimiliano Gubinelli	M.11 [L4] W.9 [L5]	Mathematical Institute, L4, L5
C8.3 Combinatorics	Prof. Alex Scott	T.9, F.9	Mathematical Institute, L5
CCS2 Quantum Processes and Computation	Prof. Aleks Kissinger	M. 12 F.12	Department of Computer Science, Tony Hoare Room (RHB)
SC1 Stochastic Models in Mathematical Genetics	Prof Simon Myers	T.16 (week 8) Th.16 (weeks 1-7)	Department of Statistics, LG.01
SC2 Probability and Statistics for Network Analysis	Prof Gesine Reinert/Prof. Mihai Cucuringu	M.14 [LG.01] T.10 [LG.01] W.13-15 (practical, weeks 2 and 6), [LG.02]	Department of Statistics, LG.01, LG.02
SC9 Probability on Graphs and Lattices	Prof. Christina Goldschmidt/Dr Brett Kolesnik	W.10, F.10	Department of Statistics, LG.01
SC10 Algorithmic Foundations of Learning	Prof Patrick Rebeschini	T.9 Th.9	Department of Statistics, LG.01
Fridays@2		F.2	Mathematical Institute,
*An Introduction to LaTeX			Recorded videos available via <a href="https://courses.maths.ox.ac.uk/">https://courses.maths.ox.ac.uk/</a>

\*These lectures will be useful to students offering an Extended Essay or Dissertation.

## COMPUTER SCIENCE

### Prelims

Functional Programming	Prof Geraint Jones	M.11 W.11	Department of Computer Science, LTB
Discrete Mathematics	Prof David Kay	M.9, Th.9	Department of Computer Science, LTA
Linear Algebra	Prof Jonathan Whiteley	M.10, T.9, F.10 (weeks 1-4)	Department of Computer Science, LTA
Probability	Prof. Matthias Winkel	M.9 (weeks 1-8)	Mathematical Institute, L1

## MATHEMATICS AND COMPUTER SCIENCE



<b>Prelims</b>			
Functional Programming	Prof Geraint Jones	M.11 W.11	Department of Computer Science, LTB
Introduction to University Mathematics	Prof. Ian Hewitt	M.10, Th.10	Mathematical Institute, L1
Introduction to Complex Numbers	Prof. Andy Wathen	T.9, Th. 11 (week 1)	Mathematical Institute, L1
Analysis I	Dr Vicky Neale	Th.10 (weeks 2-8) F.10 (weeks 1-8)	Mathematical Institute, L1
Linear Algebra I	Prof. Andy Wathen	T.9 (weeks 2-8) Th. 11 (weeks 2-8)	Mathematical Institute, L1
Probability	Prof. Matthias Winkel	M.9 (weeks 1-8)	Mathematical Institute, L1
<b>COMPUTER SCIENCE</b>			
<b>Part A</b>			
<b>Core</b>			
Compilers	Prof Quentin Miller/ Prof. Irina Voiculescu	M.10-12 (Practicals, weeks 4-8) T.11 Th.11	Department of Computer Science, LTA
Models of Computation	Prof Christian Coester	M.12 W. 12	Department of Computer Science, LTA
<b>Part A / Part B</b>			
<b>Schedule S1</b>			
Combinatorial Optimisation	Prof. Standa Zivny	M.10 (weeks 1-7) W. 10 (weeks 1-7) F. 10 (weeks 1-2)	Department of Computer Science, LTA
Computer Security	Prof Michael Goldsmith	T. 10 (weeks 1-3, 5-7) Th.10 (weeks 1-3, 5-7) F. 9 (weeks 1-3,5)	Department of Computer Science, LTA
Computer Aided Formal Verification	Prof David Parker	T.12 Th.12	Department of Computer Science, LTA
Databases	Prof. Michael Benedikt	W.15 Th. 15-17 (Practicals, weeks 5-8) F. 9-11 (Practicals, weeks 5-8) F. 15	Department of Computer Science, LTA
Geometric Modelling	Prof. Joe Pitt-Francis/Prof. Irina Voiculescu	M. 11 T. 10-12 (Practicals weeks 2,4,6,8) W.11 Th. 11-1 (Practicals, weeks 2,4,6,8)	Department of Computer Science, LTA
Machine Learning	Prof Phil Blunsom	M. 9-11 (Practicals, weeks 4, 6-8) M.16 M.17 (weeks 1-4) W. 9-11 (Practicals, weeks 4, 6-8) Th. 9-11 (Practicals, weeks Th.16 F. 15-17 (Practicals, weeks 4,6-8)	Department of Computer Science, LTA, Thom Lab (Practicals)

Principles of Programming Languages	Dr Sam Staton	M. 14-16 (Practicals, weeks 4,6-8) T.14 F.14	Department of Computer Science, LTB, Thom Lab (Practicals)
<b>Schedule S2</b>			
Lectures under Mathematics Part B: B1.2, B8.4, B6.3 are applicable.			
<b>Part C</b>			
<b>Schedule C1</b>			
Advanced Complexity Theory	Prof. Rahul Santhanam	M.11 W. 11	Department of Computer Science, Tony Hoare Room (RHB)
Bayesian Statistical Probabilistic Programming	Prof. Gunes Baydin	T. 15 F. 15	Department of Computer Science, Tony Hoare Room (RHB)
Combinatorial Optimisation	Prof. Standa Zivny	M.10 (weeks 1-7) W. 10 (weeks 1-7) F. 10 (weeks 1-2)	Department of Computer Science, LTA
Computational Biology	Prof. Peter Minary	T. 9 W. 9 (weeks 14) F. 9	Department of Computer Science, Tony Hoare Room (RHB)
Computational Learning Theory	Prof Varun Kanade	M.16 T.16 Th.16	Department of Computer Science, LTB
Concurrent Algorithms and Data Structures	Dr Hanno Nickau	T.10  T.14-16 (Practicals, weeks 2-7)  F.9-11 (Practicals, weeks 2-7)  F.14 (weeks 1-6)	Department of Computer Science, LTB, Thom Lab (practicals)
Graph Representation Learning	Prof. Ismail Ceylon	M.14  W.14 (weeks 1-2)  Th. 13-15 (Practicals, weeks 3-8)	Department of Computer Science, LTB
Law and Computer Science	Prof. Tom Melham	T. 11-13  Th. 9-11 (Practicals, weeks 1,4,6-8)	Department of Computer Science, Law Faculty
Probabilistic Model Checking	Prof. Alessandro Abate	M. 13-15 (Practicals, weeks 4, 6-8) T.14 Th. 9-11 (Practicals, weeks 4, 6-8) Th.14	Department of Computer Science, Tony Hoare Room (RHB)
Probability and Computing	Prof. Leslie Goldberg	M. 9 (weeks 1-7) W.9 (weeks 1-7) F.9 (weeks 1-6)	Department of Computer Science, LTA
Quantum Processes and Computation	Prof. Aleks Kissinger	M. 12 F.12	Department of Computer Science, Tony Hoare Room (RHB)

<b>MATHEMATICS &amp; COMPUTER SCIENCE</b>			
<b>Part A</b>			
<b>Core</b>			
Models of Computation	Prof Christian Coester	M.12 W. 12	Department of Computer Science, LTA
[In addition, the lectures under Mathematics Part A, except Differential Equations I, are applicable.]			
<b>Part A / Part B</b>			
<b>Schedule S1(M&amp;CS)</b>			
Combinatorial Optimisation	Prof. Standa Zivny	M.10 (weeks 1-7) W. 10 (weeks 1-7) F. 10 (weeks 1-2)	Department of Computer Science, LTA
Compilers	Prof Quentin Miller/ Prof. Irina Voiculescu	M.10-12 (Practicals, weeks 4-8) T.11 Th.11	Department of Computer Science, LTA
Computer Aided Formal Verification	Prof David Parker	T.12 Th.12	Department of Computer Science, LTA
Databases	Prof. Michael Benedikt	W.15 Th. 15-17 (Practicals, weeks 5-8) F. 9-11 (Practicals, weeks 5-8) F. 15	Department of Computer Science, LTA
Geometric Modelling	Prof. Joe Pitt-Francis/Prof. Irina Voiculescu	M. 11 T. 10-12 (Practicals weeks 2,4,6,8) W.11 Th. 11-1 (Practicals, weeks 2,4,6,8)	Department of Computer Science, LTA
Machine Learning	Prof Phil Blunsom	M. 9-11 (Practicals, weeks 4, 6-8) M.16 M.17 (weeks 1-4) W. 9-11 (Practicals, weeks 4, 6-8) Th. 9-11 (Practicals, weeks Th.16 F. 15-17 (Practicals, weeks 4,6-8)	Department of Computer Science, LTA, Thom Lab (Practicals)
Principles of Programming Languages	Dr Sam Staton	M. 14-16 (Practicals, weeks 4,6-8) T.14 F.14	Department of Computer Science, LTB, Thom Lab (Practicals)
<b>Schedule S2(M&amp;CS)</b>			
Lectures under Mathematics Part B: B1.1- B8.5, are applicable. In addition you may apply to take other topics from the full list of Mathematics Department courses			
<b>Part C</b>			
Schedule C1 applies. Mathematics Part C lectures all apply under Schedule C2. See the handbook for recommended Mathematics options.			
<b>MATHEMATICS AND PHILOSOPHY</b>			
<b>Prelims</b>			
<b>Mathematics:</b>			
Introduction to University Mathematics	Prof. Ian Hewitt	M.10, Th.10	Mathematical Institute, L1

Introduction to Complex Numbers	Prof. Andy Wathen	T.9, Th. 11 (week 1)	Mathematical Institute, L1
Linear Algebra I	Prof. Andy Wathen	T.9 (weeks 2-8) Th. 11 (weeks 2-8)	Mathematical Institute, L1
Probability	Prof. Matthias Winkel	M.9 (weeks 1-8)	Mathematical Institute, L1
Analysis I	Dr Vicky Neale	Th.10 (weeks 2-8) F.10 (weeks 1-8)	Mathematical Institute, L1
Introductory Calculus	Prof. Emmanuel Breuillard	W: 9 (weeks 1-8, except week 3) Th: 9 (weeks 1-8, except week 3) W.12 (week 2) Th.2 (week 2)	Mathematical Institute, L1
<b>Philosophy:</b>			
General Philosophy	Prof Alex Kaiserman	W.12	Examination Schools (South School)
Introduction to Logic	Prof Volker Halbach	M.12	Examination Schools (South School, week 8 only North School)
<b>Part A Mathematics:</b>			
Linear Algebra	Prof. Andrew Dancer	M.9, T.9	Mathematical Institute, L2
Metric Spaces and Complex Analysis	Prof. Dmitry Belyaev & Prof. Panos Papazoglou	M.11, T.11, W.12, Th.11	Mathematical Institute, L2
[These lectures are for compulsory subjects]			
<b>Part B Mathematics</b>			
B1.2 Set Theory	Prof. Jonathan Pila	M.3, T.3 W.3 (Weeks 2 and 4) No Week 3 lectures	Mathematical Institute, L2
[These lectures are for the compulsory subject "Foundations". Other courses listed under mathematics Part B can be taken: see the Mathematics & Philosophy schedule of units.]			
<b>Part B Philosophy:</b>			
101 Early Modern Philosophy: Descartes	Prof Paul Lodge	W.10	Examination Schools (Room 6)
101 Early Modern Philosophy: Hume	Prof Peter Kail	F.10	Examination Schools (Room 6)
102 Knowledge and Reality: Epistemology	Prof. Bernhard Salow	Th.10	Examination Schools (East School)
122 Philosophy of Mathematics	Prof. Alex Paseau	M. 10	Radcliffe Humanities Lecture Room
[For further Philosophy lectures, please consult the Philosophy lecture list]			
<b>Part C Mathematics: Logic</b>			
C1.1 Model Theory	Prof Jochen Koenigsmann	W.9, Th.9	Mathematical Institute, L4

C1.3 Analytic Topology	Dr Robin Knight	M.14 [L3] W.15 [L2]	Mathematical Institute, L2, L3
[See Philosophy list for Philosophy subjects which may be offered.]			
<b>MATHEMATICS AND STATISTICS</b>			
<b>Prelims</b>			
The lectures above for MATHEMATICS Prelims all apply.			
<b>Part A</b>			
The lectures above for Mathematics Part A, on the compulsory subjects of Algebra, Analysis, and Differential Equations, all apply.			
Statistics Department Options information session		F.11 (week 5)	Department of Statistics, LG.01
<b>Part B</b>			
SB1.1 Applied Statistics	Dr Neil Laws & Prof. Frank Windmeijer	M: 3 (weeks 1-7) [LG.01] T: 3 (weeks 1-6) [LG.01] Practicals: 2-3:30 (weeks 3, 5, 8) [LG.02]	Department of Statistics, LG.01, LG.02
SB2.1 Foundations of Statistical Inference	Prof George Deligiannidis	T. 2, Th.2	Department of Statistics, LG.01
SB3.2 Statistical Lifetime Models	Prof. David Steinsaltz	M.10 W.9	Department of Statistics, LG.01
[Other courses listed under Mathematics Part B can be taken: B1, B2, B3, B4, B5, B6, B7, B8]			
<b>Part C</b>			
SC1 Stochastic Models in Mathematical Genetics	Prof Simon Myers	T.16 (week 8) Th.16 (weeks 1-7)	Department of Statistics, LG.01
SC2 Probability and Statistics for Network Analysis	Prof Gesine Reinert/Prof. Mihai Cucuringu	M.14 [LG.01] T.10 [LG.01] W.13-15 (practical, weeks 2 and 6), [LG.02]	Department of Statistics, LG.01, LG.02
SC9 Probability on Graphs and Lattices	Prof. Christina Goldschmidt/Dr Brett Kolesnik	W.10, F.10	Department of Statistics, LG.01
SC10 Algorithmic Foundations of Learning	Prof Patrick Rebeschini	T.9 Th.9	Department of Statistics, LG.01
[Other courses under Mathematics Part C can also be taken.]			