Mathematics at Warwick
The Mathematics Department

35 professors, 40 lecturers, 50 research staff.
100 postgraduate students.
1000 undergraduates (spread over 4 years).
Research Reputation

3rd in the UK in 2014 Research Excellence Framework.

Mathematics Research Centre.

Regius Professorship. Martin Hairer Fields Medal.

Most invited speakers at ICM 2014.

Highest research council grant income of any UK maths dept.
Degrees Run by Mathematics Dept

- Mathematics BSc (3 years)
- Master of Mathematics (4 years)
- Maths and Philosophy (joint degree, 3/4 years)
- Maths and Business Studies (joint degree, 3 years)
- Maths and Economics (joint degree, 3 years)

Entry requirement is the same for all these courses.
Degrees run by other departments

- Mathematics and Statistics (Stats Dept).
- MORSE (Stats Dept).
- Data Science (Stats Dept).
- Discrete Mathematics (Computer Science Dept).
- Mathematics and Physics (Physics Dept).

Entry requirement is set by other department.

Very difficult to switch from these to maths.
Teaching Methods

• Lectures: 3 hours/week for each module. Typical load: 5 modules/term in Terms 1 and 2.

• Tutorials: Each student has a Personal Tutor. Frequent meetings in 1\textsuperscript{st} year, later according to students’ needs.

• Supervisions: 2 hours/week in first year, less in later years.

• Examples classes: subject based, for 3\textsuperscript{rd}/4\textsuperscript{th} year.

Typical work load=40 hours/week.
Maths BSc

1\textsuperscript{st} yr: 8 core modules (75% of normal load).

2\textsuperscript{nd} yr: 5 core modules + essay (55% of normal load).

3\textsuperscript{rd} yr: no core, must do at least 50% maths.

Remaining modules: choose from maths or any other subject.

Popular options include: Maths, Stats, Languages, Computer Science, Physics, Engineering, Business Studies, Economics, Philosophy ...
MMath and Joint Degrees

MMath:
- Same core as BSc.
- Must do 75% maths every year.

Maths & Business, Maths & Economics, Maths & Philosophy:
- First year is mostly maths.
- In second or third year student moves to other dept.

Easy to switch from any of these to Maths BSc within 1 year.
Modules: Algebra & Number Theory


2nd year: Algebra I, Algebra II, Number Theory (optional).

3rd year: (all optional) Algebraic Number Theory, Rings and Modules, Commutative Algebra, Groups and Representations, Galois Theory, Set Theory.

4th year: (all optional) Lie Groups, Lie Algebras, Representation Theory, Commutative Algebra, Geometric Group Theory, Elliptic Curves, Ring Theory, Modular Forms.
Modules: Analysis

1\textsuperscript{st} year: Analysis I, Analysis II.

2\textsuperscript{nd} year: Analysis III, Differentiation, Theory of Ordinary Differential Equations (optional).

3\textsuperscript{rd} year: (all optional) Functional Analysis I and II, Complex Analysis, Measure Theory, Theory of Partial Differential Equations, Qualitative Theory of ODEs.

4\textsuperscript{th} year: (all optional) Fourier Analysis, Dynamical Systems, Ergodic Theory, Stochastic Analysis, Advanced PDEs, Advanced Real Analysis.
Modules: Geometry and Topology

1st year: Introduction to Geometry (optional).

2nd year: (all optional) Geometry, Metric Spaces.

3rd year: (all optional) Introduction to Topology, Geometry of Curves and Surfaces, Fractal Geometry, Knot Theory, Manifolds.

4th year: (all optional) Algebraic Geometry, Differential Geometry, Hyperbolic Geometry, Riemann Surfaces, Algebraic Topology.
Modules: Applied Mathematics

1\textsuperscript{st} year: Differential Equations, Geometry and Motion.

2\textsuperscript{nd} year: Vector Analysis, Introduction to Partial Differential Equations (optional), Numerical Analysis (optional), Variational Principles (optional), Systems Biology (optional).

3\textsuperscript{rd} year: (all optional) Topics in Mathematical Biology, Matrix Analysis and Algorithms, Fluid Dynamics, Numerical Analysis and PDEs, Control Theory, Random Discrete Structures, Markov Processes and Percolation Theory.
Modules: More Applied Maths

4th year: (all optional) Quantum Mechanics, Asymptotic Methods, Calculus of Variations, Interacting Particle Systems, Continuum Mechanics, Introduction to Theoretical Neuroscience, Maths & Biophysics of Cell Dynamics, Population Dynamics, Computational Linear Algebra and Optimization, Graph Theory, Structures of Complex Systems, Brownian motion.
Other Modules

1\textsuperscript{st} year: Probability A, Probability B (optional), Mathematics by Computer, Programming for Scientists (optional), Experimental Mathematics (optional).

2\textsuperscript{nd} year: Second Year Essay, Combinatorics, Combinatorial Optimisation, Virtual Mathematics (all optional).

3\textsuperscript{rd} year: (all optional) Reading Module, History of Mathematics, Set Theory, Random Discrete Structures, Third Year Essay.

4\textsuperscript{th} year: Reading Module, Fourth Year Project.
Erasmus Programme


• Graduate with BSc (Maths) with Intercalated Year (exams during year abroad don't count).

• Or MMath with Study in Europe (exams count).

• Year abroad arranged in 2nd year.

• Fees for Erasmus year: about £2000. Erasmus grant of €400/month from EU.
2016 Entry Requirements

A-Levels:  
- A* (Maths), A* (FM), A, Grade 2 STEP  
- or  A* (Maths), A (FM), A, Grade 1 STEP  
- or  A* (Maths), A* (FM), A*  
- or  A* (Maths), A* (FM), A, A

IB: 39 points, 6 HL Maths, 6 in two more HL, Grade 2 STEP.  
- or 39 points, 7,6,6 in HL subjects, including HL Maths.

- Accept all three STEP papers.
- Accept Distinction in Advanced Extension Award (AEA) as equivalent to Grade 2 STEP.
Entry Requirements (continued)

A-Levels:  A* (Maths), A* (FM), A, Grade 2 STEP
or A* (Maths), A (FM), A, Grade 1 STEP
or A* (Maths), A* (FM), A*
or A* (Maths), A* (FM), A, A

IB: 39 points, 6 HL Maths, 6 in two more HL, Grade 2 STEP.
or 39 points, 7,6,6 in HL subjects, including HL Maths.

• No interviews. Other qualifications welcome (please ask).

• Offer usually made to applicants predicted A(M), A(FM), A or higher.
Why FM and STEP/AEA?

We want you to make the right choices:

• Ensure that you enjoy maths at a deeper level.
• Develop problem solving skills.
• Prepare to tackle our challenging maths degree.

A large proportion of our intake come from schools that do not offer help with FM or STEP/AEA.

Study independently with help from Further Maths Support Programme.
Our Intake

2015 entry:
• 2037 students applied.
• 1875 were made offers.
• 663 held offer as 1st choice, 234 as insurance.
• Intake: 300 home students, 22 overseas.

82% of home students are from state schools.

2016 target: 270 home students+25 overseas.
Is a maths degree a good career move?

From a Deloitte report commissioned by the Engineering and Physical Sciences Research Council:

“The quantified contribution of mathematical science research to the UK economy in 2010 is estimated to be approximately 2.8 million in employment terms (around 10 per cent of all jobs in the UK) and £208 billion in terms of GVA contribution (around 16 per cent of total UK GVA)”
Destinations of Warwick maths graduates

2012 graduates:
• 89.7% in graduate level employment or further study 6 months after graduation.
• Average starting salary: £27,000.
• Recruiters include: Audit Office, British Aerospace, Barclays, the Civil Service, Detica, Deloitte, KPMG, MOD, NHS, Network Rail, Price Waterhouse Coopers, Siemens and UBS.
Job roles include: Accountant, Actuary, Audit Associate, Charity Worker, Industrial Mathematician, Investment Banker, Game Developer, Management Consultant, Quantitative Analyst, Statistician, Teacher.

Further Study: many proceed to higher degrees such as MSc, PhD, PGCE or other professional training.
Why employers value Warwick maths?

• Solid and demanding degree that develops problem solving skills, communications skills, computing skills, ...

• Flexible course composition allows you to tailor your course to suit your potential career.
Fees, Expenses, Bursaries

- Current home student fees: £9000/year.
- All home students eligible for loan, repayable once earning at least £21,000.
- University/dept committed to widening participation.
- Grants/bursaries available to students from modest-income families. For more information, see Student Finance Team (Digilab).
Reasons NOT to do maths at Warwick

Warwick atmosphere might not suit you. Visit other universities!

Our degrees are hard work.
Reasons to do maths at Warwick

Excellent mathematics degree programmes.

Flexibility in course composition.

Warwick campus atmosphere and social life.
Thank You!

Please join us for tea and informal Q&A (exit by the top door and cross the bridge).

Enjoy the rest of the day.