Mathematics at Warwick

Professor Samir Siksek
Why Maths at Warwick?

Reputation: why Warwick Maths is great?

Department: will it support and welcome me?

Course: will it challenge and engage me?

University Life: will I enjoy myself?

Careers: is it a good move?
Reputation

2013 – Awarded the Regius Professorship.
2014 – Most invited speakers at ICM.
2014 – Martin Hairer awarded Fields Medal.
2014 – 3rd in Research Excellence Framework.
2015 – Queen's Anniversary Award for Further and Higher Education.
2017 – Seven Fellows of the Royal Society.
Research Income

Largest EPSRC grant portfolio of any Maths dept: £28M.
The Mathematics Institute


35 professors
40 lecturers
50 research staff
100 postgraduate students
1000 undergraduates
New Building (£35M, open in 2018)
Degrees Run by Mathematics Dept

- **Mathematics BSc** (3 years)
- **Master of Mathematics** (4 years)

Entry requirement is the same for both these courses.

Easy to switch from BSc to MMath until end of 1\textsuperscript{st} year.

Easy to switch from MMath to BSc until end of 3\textsuperscript{rd} year.
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).
- Mathematics and Philosophy (Philosophy Dept).

Entry requirement is set by other department.

Harder to switch from these to maths.
Course Structure: Maths BSc

1st yr: 8 core modules (75% of normal load).

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

3rd yr: no core, must do at least 50% maths.

Remaining modules: choose from maths or many other subjects.

Teaching: 3 hours/week for each module.
Typical load: 5 modules/term in Terms 1 and 2.
Course Structure: MMath

• Same core as BSc.
• Must do 75% maths every year.
• Year 4: compulsory project (25%).
Support for Learning

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

• **Small Analysis Classes:** Term 1, to get you quickly started on Analysis.

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

• **Examples classes:** subject based, for 3rd/4th year.

• **Math Café:** informal problem solving sessions, run by yourselves.
6) $T: U \to V$, $\exists$ basis $U$, $V$, st. rank of $T$ is 
\[
\begin{pmatrix}
I_r & O_{m-r} \\
0_{m-r} & 1_{m-r}
\end{pmatrix}
\]
$k(T) = \{0\}$, $w.v. T(w) = T(\mathbf{v}) = \mathbf{0}$
$k(T) = U$ so extend $\ker(T) = U$ with $w.v. T(w) = \mathbf{0}$
$w, v \in U$
Current 1st Year Modules (Maths BSc & MMath)

Core: Foundations, Introduction to Abstract Algebra, Linear Algebra, Analysis I & II, Differential Equations, Geometry and Motion, Maths by Computer, Probability A.

Maths & Stats Options: Introduction to Geometry, Experimental Maths, Programming for Scientists, Probability B, Statistical Laboratory I.
Current 1st Year Options (continued)

**Physics:** Classical Mechanics and Special Relativity, Electricity and Magnetism, Introduction to Astronomy, Introduction to Particle Physics, Quantum Phenomena.

**Economics:** Introduction to Quantitative Economics.

**Computer Science:** Design of Information Structures, Discrete Mathematics and Its Applications 2.
Current 1st Year Options (continued)


Languages: Arabic, Chinese, French, German, Japanese, Russian, Spanish, ...

Business: ..., Engineering: ...

See “Maths Prospectus” for full list.
Course: will it challenge/engage me?

• Course covers the entire breadth of mathematics:
  10 modules in 1\textsuperscript{st} year,
  17 modules in 2\textsuperscript{nd} year,
  41 modules in 3\textsuperscript{rd} year,
  36 modules in 4\textsuperscript{th} year.

• Many 3\textsuperscript{rd} and 4\textsuperscript{th} year modules reach frontiers of research.

• Can pursue and develop interests within and outside mathematics.
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.
TMUA/MAT/STEP?

We encourage (but don't require) applicants to sit **ONE** of:

- **TMUA**: Test of Mathematics for University Admission (November 2017)
- **MAT**: Mathematics Admissions Test (November 2017)
- **STEP**: Sixth-Term Examination Paper (June 2018)

Speak to your school about registering.
TMUA/MAT/STEP?

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 TMUA/MAT/STEP (or FM).

Study independently with help from *Further Maths Support Programme*.
Typical Offers for 2018 Entry

**A-Levels:**  
A* (Maths), A* (FM), A, Grade 6.5 TMUA  
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 6.5 TMUA  
or 39 points, 6 HL Maths, 6 in two more HL, Grade 1 STEP  
or 39 points, 7, 6, 6 in HL subjects, including HL Maths.

Good performance in MAT = Grade 6.5 TMUA = Grade 1 STEP
Offers and Entry (continued)

• We accept all three STEP papers.

• MAT and TMUA are in November. STEP is in June. Ask your school to register you. Registration deadline: 15 October.

• No interviews.

• Other qualifications welcome (please see website).
Our Intake

2016 entry (home students):

• 1746 applications.
• 1524 received offers.
• 591 held offer as firm (1st choice), 195 as insurance.
• Intake: 293 home students, 23 overseas.

82% of home students are from state schools.

2018 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

• 89.7% in graduate level employment or further study 6 months after graduation.
• Average starting salary: £27,600.
• 3% of Alumni earn more £100K.
• 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.
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

Great department, with outstanding reputation.

Excellent mathematics degree programme.

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.