Mathematics at Heriot-Watt

Mathematics underpins the modern world:

- ▶ The machinery and structure underlying science, engineering and finance.

- ▶ A way of thinking about the world that is clear, logical and explicable.

- ▶ Takes real world problems, reduces them to their essence and solves them.

Mathematics in the real world

Alan Turing: mathematician, and the father of Computer
Science and our modern interconnected world

Mathematics in the real world

- ▶ Google: Entire enterprise based on PageRank, which uses the Mathematics you will learn in 2nd year Linear Algebra and 3rd year Numerical Analysis.

- ▶ Every little bit of your smart phone:
    - ▶ Circuit design uses Discrete Mathematics (1st and 2nd year).
    - ▶ Circuit components use quantum effects (4th year).
    - ▶ Compression software uses Huffman codes. (4th year).

- ▶ The global financial system from trading, pricing, quantification of risk . . .

Reasons for studying Maths

- ▶ A subject you enjoy and are good at.

- ▶ Teaches you to think clearly and logically and formulate and solve real-world problems.

- ▶ Gives you skills in IT, technical writing, & communication.

- ▶ Makes you highly employable.

Reasons for studying Maths here

- Highly rated department in both teaching and research.

Some evidence . . .

Teaching and Research

Teaching:

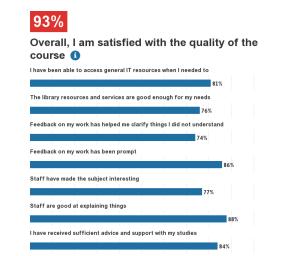Research:

- In the REF 2014, Mathematics 13 out of 53 in UK.

2016 Complete Universities Guide:

- 17th out of 70 departments.

NSS 2016

Department ranked 3rd in Scotland and top 10 in UK.

Reasons for studying Maths here:

- Highly employable (2016 unistats.direct.gov.uk data):

  - 100% employed or in further education after 6 months.

  - 75% in professional or managerial position.

HERIOT
WATT
UNIVERSITY

- Analyst, Black Rock

- Unit Pricing Analyst, Zurich Life

- Software Developer, First Derivatives plc

- AML Operations Analyst, Royal Bank of Scotland

- Financial Crime Associate, RBS

- Maths Teacher

- Research Assistant, Edinburgh University

- Commercial Manager, Oak Ltd

Our courses

- BSc(Hons) 3 or 4 years in

    - Mathematics

    - Mathematics, Statistical & Actuarial Sciences

    - Mathematics with/and Computer Science

    - Mathematics with Physics

    - Mathematics with Finance

    - Mathematics with Statistics

    - Mathematics with French/German/Spanish

- MMath(Hons) 4 or 5 years in Mathematics

- ▶ Entrance requirements: Higher ABBBB, A in Maths; A-level ABB, A in Maths
- ▶ First year
  - ▶ Introduction to University Mathematics, Calculus, Statistics + 1 option
  - ▶ Calculus, Problem Solving, Statistics + 1 option
- ▶ You can, if you wish, just study Maths, and choose Mathematics in Context and Problem Solving . . .
- ▶ or you can choose to follow an interest in languages, or finance, or physics, . . .
- ▶ or you can follow a complete joint degree programme

Key features of Heriot-Watt

- ▶ Staff-student ratio is approx. 1 to 10
- ▶ Internationally leading researchers
- ▶ Emphasis on the practical applications of maths underpinned by solid theoretical foundations
- ▶ Emphasis on employability from week 1
  - ▶ Courses dedicated to skills, business awareness & careers
  - ▶ A professional development programme throughout your degree

Further reading

- Richard Courant and Herbert Robbins, *What is mathematics?*. Oxford Univ. Press 1996.
- Martin Gardner, *Hexaflexagons, probability paradoxes, and the tower of Hanoi*. Cambridge Univ. Press 2008.
- Peter M Higgins, *Mathematics for the curious*. Oxford Paperbacks 1998.
- Mark V Lawson, *Algebra & Geometry: an Introduction to University Mathematics*. CRC Press 2016.
- Marcus Du Sautoy, *The music of the primes*. Harper Perennial 2004.
- Ian Stewart, *Taming the infinite.* Quercus Publishing 2009.