University of BRISTOL

Engineering Mathematics

Making a difference with mathematics

Professor Alan Champneys – Admissions Tutor

Bristol: the University, the city

The City

- Best place to live in the UK (Sunday Times 2017)
- 11th on National Geographics Cool List (2018)

The University

- Top 50 University in the world (QS rankings 2020)
- Top 10 Univesity in the UK
- **UK employers' 2nd most targeted** (High Fliers 2019)
- 5th best for research in UK (REF 2014)
- **Best for General Engineering in UK** (Guardian 2020)

What is Engineering Mathematics?

- All Engineering degrees at Bristol have lots of Maths. Taught by us, the Department of Engineering Mathematics.

- But you're here to find out about 4-year MEng and 3-year BEng degrees accredited by **Inst. of Engineering & Technology (IET)** -> Chartered Eng status and **Institute of Maths and its Applications (IMA)** -> Chartered Math status.

- The degree is driven by mathematics for the modern economy.

  - **Engineering, Energy & the Environment, IT and Data, Heathcare**

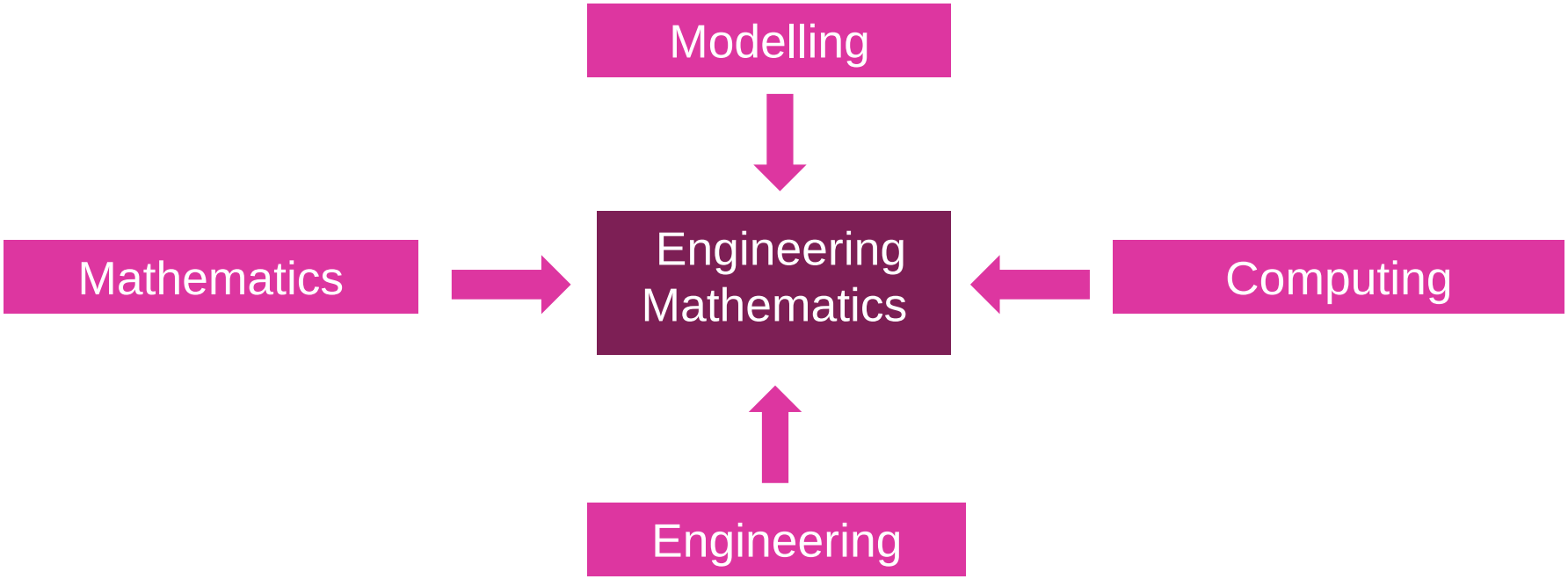
- Research-led and industrially-led teaching

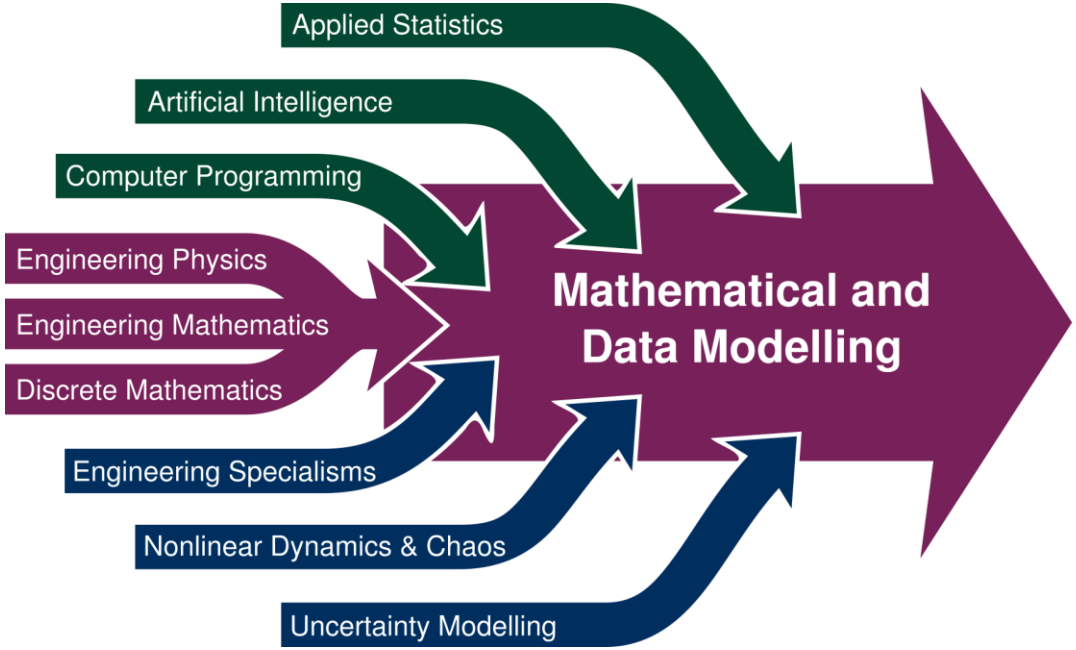
- *But what is the degree actually about? …*

What Engineering Mathematics isn't

Brand X Engineer

What our degree is about





Making a difference with maths

Mathematics

current units:

- Engineering Mathematics 1& 2
- Discrete Mathematics 1 & 2 Applied Linear Algebra
- Applied Statistics, Nonlinear Dynamics & Chaos, Optimisation Theory & Applications, Partial Differential Equations, Continuum Mathematics
- Advanced Nonlinear Dynamics & Chaos, Mathematical Modelling in Medicine & Physiology, Delay & Stochastic Equations, Dynamics of Networks, Control Theory, Modern Mathematical Biology

(can be subject to change)

Engineering

current units:

- Engineering Physics 1 & 2, Professional Engineering
- Fluids and Thermodynamics, Dynamics and Control
- Aircraft Propulsion, Sensors, Signals & Control, Fundamentals of Reliability for Engineers, Heat Transfer
- Robotic Systems, Transport and Mobility Modelling, Energy Management, Power Generation for the 22nd Century, Biomechanics, Ultrasonic Non-Destructive Testing, Sustainable Systems, Innovation, Entrepreneurship and Enterprise

(can be subject to change)

Computing

current units:

- Introduction to & Further Computer Programming
- Numerical methods with Matlab, Introduction to Data Science, Scientific Computing, C for Embedded Systems
- Introduction to AI, Computational Neuroscience
- Bio-Inspired AI, Applied Data Science, Uncertainty Modelling for Intelligent Systems, Computational Genomics and Bioinformatics, Intelligent Information Systems

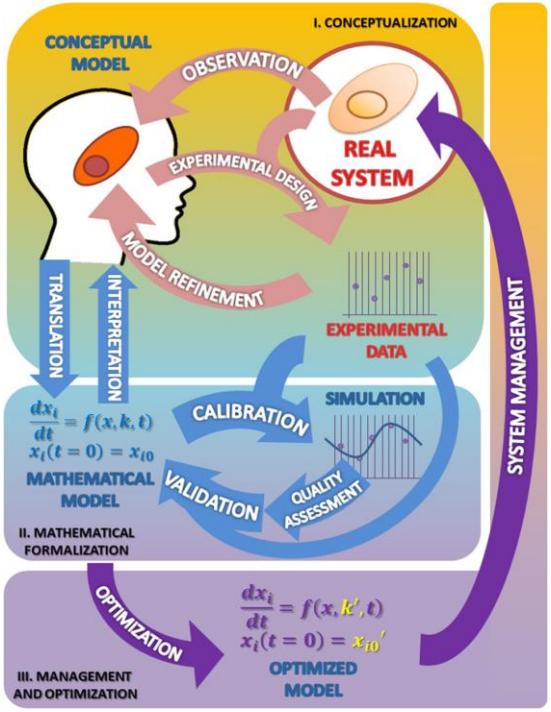
(can be subject to change)

It all relies on Mathematical & Data Modelling

- Write down simplified (not perfect or complete) mathematical laws for your real-world 'system'
- Examine the behaviour of the mathematical model with computer experiments and analysis
- Apply results to help engineers and applied scientists improve the real system

Real hands-on problem solving.

- you will find out lots more about this TODAY



More features of Eng. Maths at Bristol

- *Small, friendly department* (about 80 students per year) **unique** in UK
- The EngMaths student society (BEMS) - e.g. "A Pint of Eng Maths"
- Cutting edge courses **informed by research** - good staff/student ratio
- Final year externally-motivated **research projects**

  'the highlight of my degree'
- **International** - Study abroad option in 3rd year; language options
- Strong **industrial links**; industrial mentors, internships, **year in industry**
- National Student Survey: **Overall Satisfaction > 90%** (2013 – 2019)

High achievers - examples of recent entrepreneurs

The healthy snack company Graze was a start-up whose CTO was an Engineering Mathematics graduate. The company has taken on other graduates of ours since.

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Ripjar is another successful company founded by one of our Engineering Mathematics graduates. The company specialises in complex data analysis.

Shoemaster Atomlab is new innovative R&D arm of the shoemaster footware design software and Atom footware manufacture group. They have set up in the University's Engine Shed incubator space and are building their team with Eng Maths grads.

University of BRISTOL

Graduate opportunities

- **All seeking work in graduate jobs at six months**
- **85% in careers which need degree; 65% using their subject**

  Business, research and administrative professionals 40%
  Natural and social science professionals 15%
  Information technology and telecommunications professionals 15%
  Business and public service associate professionals 15%
  Teaching and educational professionals 10%
- **Starting salary 12% above sector average**
- Industry e.g. aerospace, automotive, energy, telecoms
- Research (MSc, PhD)
- Government agencies e.g. security, transport
- Information technology & data analytics
- Consultancy, Entrepreneurship

'If I could choose again, I would have studied Engineering Mathematics with Study in Continental Europe, because it would have provided exactly the right background for working in our industry'
Andrew Garrad honorary graduate *(founder world's largest renewable energy consultants, chair Bristol Green Capital 2015)*

Find out more...

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