Introduction to Mathematics

We're delighted you're thinking about studying at Brunel University London.

Our lecturers have put together the following activities to help you prepare to study mathematics at university. These will give you a snapshot of how mathematics is embedded in the world around us, as well as recommending some study tools to help you brush up your A-level Maths skills. You'll get a full breakdown of information before you enrol.

On our website you can also find out more about your modules and chat to a current student.

If you have any more questions, please get in touch.

We look forward to welcoming you to Brunel.

Sample lectures/activities

1. **Brush up on A-level Maths to get ahead of the game**
   In year 1, we will spend a little time revising some of the key material from A-level Maths, and we will spend a lot of time extending ideas and introducing more advanced mathematics, some of which you might have seen if you studied A-level Further Maths. Don't worry if you haven't done A-level Further Maths, we start from the beginning on those topics.
   Dr Martin Greenhow has produced some online tests to help you. The "tests for dogs" are based on A-level Maths and Further Maths, and the "tests for cats" are based on GCSE.

2. **MATLAB and Octave for mathematical computation**
   MATLAB is a programming language for mathematics that is able to plot functions and data, manipulate matrices, implement algorithms and various other things. It is a very powerful tool for mathematics.
   Octave is able to do much of what MATLAB can do and is available free. Dr Simon Shaw has produced a video introducing how Octave can be used to help answer your A-level Maths questions and much more.

Online resources

There are a lot of interesting online resources to learn how mathematics occurs in the real world and is embedded in our everyday lives.

- Marcus du Sautoy, The Secret Rules of Modern Living Algorithms. He also has many other videos worth watching.
- Hannah Fry, we recommend the Christmas lecture series as well as her other videos.
- Jim Al-Khalili, we recommend the Science and Islam documentary.
- The Institute of Mathematics and its Applications (IMA) have some interesting content available.
- We also recommend the MathsCareers website.

Reading list

- James Stewart, "Calculus", 8th edition (International Metric Version), Thomson Brooks/Cole, 2016. The 6th and 7th editions of this book are equally suitable.
- Howard Anton and Chris Rorres, "Elementary Linear Algebra: With Supplemental Applications", 11th edition, Wiley, 2015. The 8th, 9th and 10th editions of this book are equally suitable.
- Dennis D. Wackerly, William Mendenhall, Richard L. Scheaffer, "Mathematical Statistics with Applications", 7th Edition, Thomson Brooks/Cole, 2008.
- Brian D. Hahn, Daniel T. Valentine, "Essential MATLAB for Engineers and Scientists", 6th Edition, Academic Press, 2017. The 3rd, 4th and 5th editions of this book are all suitable. This will be available as an e-book at Brunel library once you are a registered student.
- Kenneth Rosen, "Discrete Mathematics and its Applications", 8th edition, McGraw-Hill, 2019. The 6th and 7th editions of this book are equally suitable.