
Focus of the Month
May 2017

# Preparing for Higher Education

> *"Evidence from "high-performing" countries suggests that the strongest incentive for students to continue with maths is that they are required to do so to progress to higher education and employment. So there is a clear need for universities to press for new routes and qualifications, to support their development, and to endorse them. Universities also need to give much more explicit signals as to the mathematical requirements of higher education courses and to the qualifications the courses require for entry – or at least to signal the enhanced prospects of students with these skills."*
>
> Mathematics after 16: the state of play, challenges and ways ahead
> Nuffield Foundation, 2014

Our focus for this month is the support and advice the FMSP provides relating to the importance of AS/A levels in Mathematics and Further Mathematics for transition to undergraduate studies across a range of degree subjects.

## Why Mathematics is important

A large number of degree courses require or encourage AS or A level qualifications in Mathematics and Further Mathematics as part of their entry requirements. For example, it is common for degree courses in **Mathematics** and closely related subjects such as **Engineering** to make a differentiated offer for students who have studied AS or A level Further Mathematics. This means that students who have taken these qualifications get a reduced offer:

> *Standard Offer:*
>
> *AAA or A*AB or;*
> *AAB or A*BB or A*AC, including Further Mathematics A-level or;*
> *AAB or A*BB or A*AC, PLUS Grade A in AS-level Further Mathematics*

Some degree courses encourage students to take Further Mathematics through the wording of their entry requirements, in this case for a **Mathematics** degree:

> *We encourage you to take A Level Further Mathematics if it is available to you and will welcome this as one of your top three A Levels in your application. As a School we collaborate with the* Further Mathematics Support Programme *. Whilst we don't give an explicitly lower offer for people taking Further Mathematics, we will take it into account if you narrowly miss our offer.*

There are some degree courses for which mathematics is desirable or a requirement, which be surprising to students applying to university. One **Chemistry** degree, for example, has the entry requirement:

> *AAA including Chemistry and Mathematics"*

Other subjects often have a similar requirement, for example one **Biology** course indicates that essential subjects are:

> *"Biology and either Chemistry or Maths"*

For many other degree courses, it is beneficial for students to have well-developed mathematical skills. The 2014 HEA report Mathematical Transitions states:

> *"There should be clear signalling to the pre-university sector about the nature and extent of mathematical and statistical knowledge and skills needed in undergraduate degree programmes. As part of this signalling university tutors should consider recommending the benefits of continuing with mathematical/statistical study beyond the age of 16."*

So, for degree courses in subjects such as Psychology, Economics, Business, Geography and Sports Science it is beneficial for students to continue to study Mathematics post-GCSE in order to sustain and extend their mathematical knowledge and understanding.

The Russell Group report Informed Choices lists Mathematics and Further Mathematics as 'facilitating subjects', subjects which are required most often for entry to degree courses. The FMSP Universities page provides more information.

The FMSP liaises with admissions tutors in universities to find out more about the mathematical aspects of their undergraduate degree courses and how students can best prepare mathematically. A summary can be found on the FMSP website for each of Mathematics, Engineering, Physics, Biology, Chemistry and also for a range of Other Subjects.

## Resources for students and teachers

When deciding which degree subject to choose it is helpful for students to see examples of the material they will study. The FMSP website contains exemplar materials of the mathematics covered in a number of degree subjects, including Mathematics,

Biology and Chemistry degrees. Students could use these independently or work on in class with their teachers.

For students applying for Mathematics degrees there is additional information on applying for a Mathematics degree, including interview preparation.

Some Mathematics degree courses and related subjects require or indicate a preference for STEP (Sixth Term Examination Paper), AEA (Advanced Extension Award), the MAT (Mathematics Admission Test) or the TMUA (Test of Mathematics for University Admission) as part of the entry requirements. The FMSP provides resources and support to help students prepare for these examinations.

For students furthermaths.org.uk/step-aea-mat

For teachers furthermaths.org.uk/step_aea_support

## Medical Degrees

Some medical degree courses have specific entry requirements relating to A level Mathematics and Further Mathematics. A summary of guidance can be found on the Medical degree page of the FMSP website.

## Other useful links

- The NRICH website contains useful guidance on applying for degrees in mathematics and related subjects. The website also has useful guidance on how to prepare for degrees in a range of subjects that would benefit from having studied A levels in Mathematics or Further Mathematics.
- The official STEP, AEA , MAT and TMUA websites provide detailed information about these qualifications and allow access to sample materials.
- Some students might choose to take a Core Maths qualification rather than AS/A level Mathematics alongside their other level 3 qualifications.
- General advice and guidance on applying to university can be obtained from the UCAS website.
- The importance of quantitative skills in the social sciences has been highlighted by the Q-Step Programme. The programme has 15 Q-Step centres and 3 Q-Step affiliates placed around the country who are working to develop specialised undergraduate programmes. Through their Support Programme they are also working to promote quantitative skills training that will be accessible to students who may be progressing to the social sciences at university.

## Understanding the UCAS tariff

From this academic year, a new UCAS tariff applies. The points that will be awarded for A level, AS level, Core Mathematics and Extended Project Qualifications (EPQs) are shown in the table below.

| | A* | A | B | C | D | E |
|---|---|---|---|---|---|---|
| A level | 56 | 48 | 40 | 32 | 24 | 16 |
| AS level | - | 20 | 16 | 12 | 10 | 6 |
| Core Mathematics | - | 20 | 16 | 12 | 10 | 6 |
| Extended project Qualification (EPQ) | 28 | 24 | 20 | 16 | 12 | 8 |

Teachers can download a factsheet for schools and advisers from the UCAS website and there is also a factsheet for parents about the amended tariff.

## Information for universities

The FMSP provides information for universities about A level Mathematics and Further Mathematics. Recently, around 60 representatives from a wide range of UK university academic and admissions departments attended the FMSP's *Changes to Level 3 Mathematics* conferences in London and Manchester. Materials from these events are available on the FMSP's Information for HEIs page, which also provides links to the A level Mathematics and A level Further Mathematics briefing documents. There is also information about other relevant research publications and a link to the MEI Pre-University Mathematics Guide.