

# Further Mathematics

## AS/A Level

### OCR (MEI Syllabus)

#### Structure & Specification

Year 1- AS (3896)

Year 2- A2 (7896)

#### Syllabus details

OCR 7896 (MEI) syllabus is followed.

#### What does the course include?

Students doing the full Further Mathematics A level will study two mechanics units and two statistics units with the main mathematics groups, spread over two years. The details of these are summarised on the course leaflets for A Level mathematics but broadly they are:

- Mechanics 1, 2. These units look at force and motion and how they are modelled mathematically. The course centres on Newton's Laws of motion.
- Statistics 1, 2. These units look at the statistical analysis of data and the testing of hypotheses.

These students will also cover the same pure mathematics as the main A level groups

- Pure Mathematics (C1,C2, C3, C4). Algebra, trigonometry and co-ordinate geometry is developed. The theory of calculus is introduced in C1 and a large part of the rest of the course builds on this theory. Further algebra theory is developed, including the theory of logarithms. Number sequences are studied in depth for two important sequences – the arithmetic and geometric sequences. The language of functions is used and much emphasis is placed on the information to be gained from the connection between functions and graphs. The theory of calculus is developed further. The theory of partial fractions is introduced and used in calculus. Further trigonometry develops more complicated formulae connecting angles. Parametric equations are studied as well as the theory of vectors. Mathematical proof is developed. Complex numbers, vectors and matrices are the main theoretical topics.

#### What are the entry requirements?

Grade A or A\* at GCSE.

Students doing the full A level in Further Mathematics will do four other modules  
Further Pure Mathematics 1 (FP1).

Geometry, including polar co-ordinates and conics. Complex numbers and their connections to graphs. Further algebra.

- Further Pure mathematics 2 (FP2) which offers further theory in calculus and geometry
- The last two units entered depends to some extent on the interests of the group - differential equations and decision and discrete mathematics are possibilities.

Students doing Mathematics A level and Further Mathematics AS will study nine of the above modules over the two years.

#### How will I learn?

Three teachers will teach the course and a variety of methods will be used, involving investigative work as well as the study of theory. Although the course is theoretical by its very nature mathematics is also an important tool for studying the real world and connections with practical situations will be made whenever possible.

#### How will my work be assessed?

All modules will be assessed by a one hour and thirty minute exam. There will also be coursework assignments for C3 and a one hour comprehension paper for C4.

#### What skills will I need to be successful in this subject?

This is a course for people who have a very good grasp of basic mathematics and really enjoy the subject. The course is very highly rated in terms of gaining entry to a range of university courses.

#### What are the opportunities after this course for further/higher education and employment?

The course is universally recognised as an excellent academic subject, useful in itself but also as an indicator of ability. It can lead on to an exceptionally wide range of courses at university and jobs in later life.