

# MATHEMATICS AND FURTHER MATHEMATICS at AS/A2 LEVEL

**EXAMINATION BOARD: OCR**

## WHY STUDY MATHEMATICS?

The study of Mathematics at this level is generally undertaken by students who enjoy the unique aspects of this subject: the disciplined approach to problem solving, mathematical modeling of real life problems and the development of new, more precise mathematical methods. It is clearly beneficial to all students embarking on science or related subjects at A level. It can be successfully combined with a wide variety of other subjects but some students find it more difficult if they are not using their maths skills in other disciplines.

## ENTRY REQUIREMENTS

To embark on an A level or AS level course it is desirable for students to have followed the higher level GCSE syllabus as this contains some core knowledge for the A level.

## SUBJECT SPECIFICATION

A level Mathematics is examined through six modules. An AS qualification can be gained by completing three modules. The AS qualification is completed during the Lower Sixth year. Two combinations leading to A level are available as follows:

Either:

Modules	Core Maths 1 Statistics 1	Core Maths 2 Statistics 2	Core Maths 3	Core Maths 4
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Or:

Modules	Core Maths 1 Mechanics 1	Core Maths 2 Statistics 1	Core Maths 3	Core Maths 4
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**In the Lower Sixth** students study three modules Core 1, Core 2 and Statistics 1 leading to AS Mathematics.

**In the Upper Sixth** they continue with the remaining three modules to complete their A level in Mathematics.

During the course there are three areas of study outlined below:

### Core Mathematics

The Core Maths syllabus covers more advanced treatment of trigonometry, functions, vectors, algebra and co-ordinate geometry, with an introduction to calculus, series and numerical methods.

## **Applications**

### **Statistics**

The Statistics syllabus introduces the ideas of formal probability distributions, hypothesis testing, correlation and regression analysis.

### **Mechanics**

The Mechanics syllabus includes an introduction to kinematics, forces and equilibrium, Newton's Laws, variable acceleration problems and momentum.

All Lower Sixth mathematics students follow a common course during the Lower Sixth. In the Upper Sixth those students studying Biology, Geography or Business Studies may find the statistics option more suitable for their future needs, those studying Physics or Design may find the mechanics option more suitable.

### **Examinations**

Each of the modules is examined through a written paper lasting 1 hour 30 minutes. Modules are examined in January and June.

### **Further Mathematics**

Students who are interested in Further Mathematics A level should talk to the Head of Mathematics for details of the course. Further Mathematics is only available to pupils who have gained an A\* grade at GCSE (or, in exceptional circumstances, to pupils with an A grade at GCSE, in consultation with the Head of Mathematics).

A further six modules in Mathematics will be studied including at least two further Pure Mathematics modules.

Each module is examined in the same way as for A level Mathematics.

## **HIGHER EDUCATION AND CAREER CHOICES**

The study of Mathematics is beneficial and in some cases essential if you wish to go on to study any of the following courses at university:

Mathematics	Science	Engineering	Business Studies
Economics	Geography	Medicine	Veterinary Science
Accountancy	Social Science		

and many more.

### **FURTHER INFORMATION:**

Students or parents requiring any further details are most welcome to contact Miss E Scott, Head of Mathematics.