FURTHER MATHEMATICS

Gordon's
Sixth Form

A LEVEL

What is Further Mathematics?

Further Mathematics is a challenging A Level qualification which both broadens and deepens the work covered in A Level Mathematics.

Who can take Further Mathematics?

Those students who are especially keen on Mathematics and are looking to study a mathematics-rich degree at university should consider taking A Level Further Mathematics. Students will need to study for A Levels in both Mathmatics and Further Mathmatics.

Which units will I study for Further Mathematics?

During the course you will study 4 units. Papers 1 and 2 contain compulsory units:

Paper 1   Core Pure Mathematics 1
Paper 2   Core Pure Mathematics 2

Papers 3 and 4 contain optional units. Gordon's School is offering the following units:

Paper 3   Further Mechanics 1
Paper 4   Decision Mathematics 1

Why Study Further Mathematics?

There are many good reasons to take Further Mathematics:

- Students overwhelmingly find it to be an enjoyable, rewarding, stimulating and empowering experience.
- For someone who enjoys mathematics, it provides a challenge and a chance to explore new and/or more sophisticated mathematical concepts.
- It will deepen your knowledge and understanding of pure mathematics.

- You will be able to study a wider range of applied mathematics relevant to your future choice of degree/employment.
- It enables students to distinguish themselves as able mathematicians in the university and employment market.
- It makes the transition to a mathematics-rich university course easier.
- Some prestigious university courses will only accept students with Further Mathematics qualifications.
- You will probably end up earning more than the rest of us!

In the words of university students

"Students with Further Mathematics have less work to do. I had to learn stuff they already knew and therefore they had more time on the new topics."

"The people I know who didn't do Further Mathematics found some topics difficult because they had never seen them before and, because of the schedule at university, each topic takes only one lecture."

Any student planning to take a mathematics-rich degree (this covers a very wide range of academic areas - engineering, sciences, computing, finance, economics etc, as well as mathematics itself) will benefit enormously from taking A Level Further Mathematics.

Students who are not planning to study for mathematics-rich degrees but who are keen on mathematics will find Further Mathematics a very enjoyable course and having a Further Mathematics qualification identifies students as having excellent analytical skills, whatever area they plan to study or work within.

Further Mathematics introduces students to a varied range of new topics, such as...

Core Pure Mathematics
Complex numbers, polar coordinates, matrices, proof, differential equations, vectors, calculus and hyperbolic functions.

Mechanics
Momentum and Impulse, Collisions, Centres of Mass, Work and Energy, Elastic Strings and Springs

Decision Mathematics
Algorithms and Graph Theory, Algorithms on Graphs, Critical Path Analysis, Linear Programming.

The flowchart below will help you to decide whether or not you should consider studying Further Mathematics.

FAQ's

What GCSE Maths grade will I need to do the course?

A minimum of a grade 8.

How will I be assessed?

All examinations will take place in May/June at the end of Year 13.

| Paper 1	1½ hours	75 marks
Paper 2	1½ hours	75 marks
Paper 3	1½ hours	75 marks
Paper 4	1½ hours	75 marks

Further help

If you would like any further information about studying Further Mathematics please speak to Mr Eaden or go to the following websites:

Further Mathematics Support Programme
www.furthermaths.org.uk/students

Edexcel Exam Board
http://qualifications.pearson.com/en/qualifications/edexcel-a-levels/mathematics-2017.html
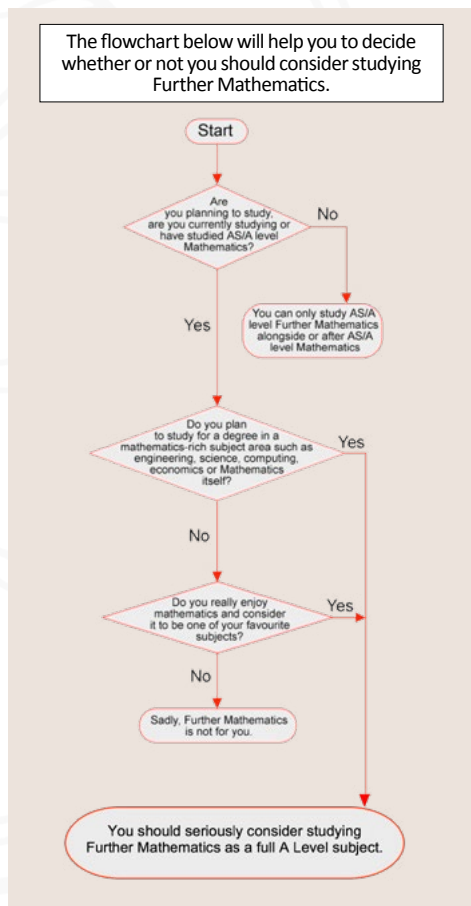
FURTHER MATHEMATICS

HEAD OF DEPARTMENT
Mr M Eaden
meaden@gordons.school

HEAD OF KS5 MATHEMATICS
Mrs H Kellwood
hkellwood@gordons.school

Exam Board
Edexcel

Specification
A-Level Further Mathematics 9FM0

COURSE DETAILS

A Level Further Mathematics:

Examination
The A-Level Further Mathematics course is examined at the end of Year 13.

Pure Mathematics and Applied Mathematics:

Students will study the compulsory elements of **Core Pure Mathematics** (proof, complex numbers, matrices, further algebra and functions, further calculus, further vectors, polar coordinates, hyperbolic functions and differential equations). In addition to this, students will study two additional elements on **Further Mechanics** (momentum and impulse, collisions in one and two dimensions, work, energy and power, elastic strings and springs and elastic energy) and **Decision Mathematics** (algorithms, graph theory, algorithms on graphs, critical path analysis and linear programming).

All students completing the A Level in Further Mathematics must sit four exams at the end of Year 13.

HOW WILL I BE ASSESSED?

Exam Papers	% of GCE	Details
Paper 1: Core Pure Mathematics 1	**25%**	Written examination: 1 hour 30 minutes, 75 marks
Paper 2: Core Pure Mathematics 2	**25%**	Written examination: 1 hour 30 minutes, 75 marks
Paper 3: Further Mechanics 1	**25%**	Written examination: 1 hour 30 minutes, 75 marks
Paper 4: Decision Mathematics 1	**25%**	Written examination: 1 hour 30 minutes, 75 marks

WIDER READING

- Mathematics: a very short introduction by Timothy Gowers (CUP, 2002)
- Surely You're Joking, Mr Feyman by R.P. Feynman (Arrow Books, 1992)
- The Pleasures of Counting by T.W.Körner (CUP, 1996)

Gordon's School
West End, Woking
Surrey, GU24 9PT

www.gordons.school
01276 858084