Integrity
Curiosity
Respect



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A LEVEL

# Further Mathematics

## WHAT IS FURTHER MATHEMATICS?

Further Mathematics is a prestigious A level that is taken nationally by some of the most mathematically able sixth form students. At Dixons Sixth Form Academy students that take this course will do so in addition to their three core A levels. All students taking Further Maths will sit the AS examination in Further Maths at the end of year one.

## WHY STUDENTS CHOOSE THIS COURSE

This course is suitable for students who have enjoyed the study of Mathematics and who are excited to learn about new branches of the subject.

## WHAT STUDENTS CAN DO WITH THIS COURSE

An A Level in Further Mathematics is useful for a wide range of careers and university as it is a facilitating subject. To study a degree in Mathematics, Engineering or Physical Sciences you do not need to have Further Mathematics, but it is a distinct advantage when applying. Indeed, some offers may be reduced for students who have studied the subject.

## HOW THIS COURSE IS ASSESSED

All students will sit the AS examination at the end of YR1. This consists of two 100-minute papers;

- Core Pure
- Decision 1 and Decision 2

A level examinations take place at the end of YR2 where students will take four examinations, with each paper being 90 minutes long:

- Core Pure Mathematics 1
- Core Pure Mathematics 2
- Decision 1
- Decision 2

## ENTRY REQUIREMENTS

All our course entry requirements are detailed in the Entry Requirements document located in the admissions section of our website.

## FURTHER READING

Things to Make and Do in the Fourth Dimension, Matt Parker (Penguin, 2015). Stand-up comedian and mathematician Matt Parker uses bizarre Klein Bottles, unimaginably small pizza slices, knots no one can untie and computers built from dominoes to reveal some of the most exotic and fascinating ideas in mathematics.

- The Man Who Knew Infinity R. Kanigel (Abacus, 1992) The life of Ramanujan, the self-taught mathematical prodigy from a village near Madras.
- Infinity: The Quest to Think the Unthinkable by Brian Clegg
- The Mathematics of Ciphers by S.C. Coutinho
- Journey Through Genius: The Great Theorems of Mathematics by William Dunham

# What the course covers

All candidates will sit the compulsory Core mathematics module. Students will also sit the optional modules Decision 1 and Decision 2 in Years 1 and 2.

**The Core content consists of:**

- Proof; Complex numbers; Matrices; Vectors; Algebra; Series; Calculus; Polar co-ordinates; Hyperbolic functions and Differential equations

**The Decision 1 module consists of:**

- Algorithms (Sorting, Bin-Packing, Flow Charts), Graph Theory, Algorithms on Graphs (Kruskal's, Prim's, Dijkstra's and Floyd's Algorithms), Route Inspection, Travelling Salesman Problem, Linear Programming, Simplex Method and Critical Path Analysis (Gantt Charts, Resource Histograms).

**The Decision 2 module consists of:**

- Transportation Problems, Allocation Problems, Flows in Networks, Dynamic Programming, Game Theory, Recurrence Relations and Decision Analysis.

The scheme of work has been designed so that all students sit the AS examination at the end of YR1.



## FURTHER INFORMATION

The complete specification can be viewed at: https://qualifications.pearson.com/en/qualifications/edexcel-a-levels/mathematics-2017.html#%2Ftab-AlevelFurtherMathematics