

Mathematics

What is Mathematics?

Mathematics is the study of numbers and all things related to numbers. Pure (Core) Mathematics is the study of mathematics in and for itself. It is highly theoretical and serves as the foundation for the applied topics of Decision Mathematics, Mechanics and Statistics. Decision Mathematics is the study of mathematics for use in business systems. Mechanics is the study of physical systems. Statistics is the study of data. Decision Mathematics, Mechanics and Statistics are used in the mathematical modelling of the real world.

What sort of student does it suit and what will you get out of the course?

Mathematics suits students with an enquiring, analytical mind. It is a highly regarded subject and fits well with most other subjects. Since it serves to increase the understanding of numerical and physical systems, it is a particularly good subject choice when combined with Biology, Chemistry and Physics, or Accounting, Business Studies and Economics. Philosophers and musicians may also find the subject appealing.

AS specification number 8371 (Edexcel)

Unit 1: Core Mathematics 1 (C1)

(1.5 hour exam; 33.3% AS weighting, 16.7% for A-level). This unit covers algebra, co-ordinate geometry, arithmetic sequences and series, differentiation and integration. The exam consists of compulsory questions worth 75 marks, with shorter questions at the start of the paper leading to longer, extended questions.

Unit 2: Core Mathematics 2 (C2)

(1.5 hour exam; 33.3% AS weighting, 16.7% for A-level). This unit covers algebra and functions, further co-ordinate geometry, geometric sequences and series, trigonometry, exponentials and logarithms, further differentiation and further integration. The exam consists of compulsory questions worth 75 marks, with shorter questions at the start of the paper leading to longer, extended questions.

Unit 3: Statistics 1 (S1)

(1.5 hour exam; 33.3% AS weighting, 16.7% for A-level). This unit covers mathematical models in probability and statistics, representation and summary of data, probability, correlation and regression, discrete random variables and the normal distribution. The exam consists of compulsory questions worth 75 marks, with shorter questions at the start of the paper leading to longer, extended questions.

MPW approach to AS study

Since C1 is a prerequisite for all other units, it is taught first. Thereafter a flexible approach is taken to the teaching of C2 and S1 to make the best use of the time available. Carefully chosen homework reinforces learning in class and regular testing allows the tutor to identify and rectify students' weaknesses quickly. Once the specification has been fully completed, the emphasis shifts to past-paper practice and revision.

AS course books

The following course books will be provided by MPW:

Pledger *et al*, *Core Mathematics 1*, Heinemann Modular Mathematics for Edexcel AS and A-level (ISBN: 0435510975)

Pledger *et al*, *Core Mathematics 2*, Heinemann Modular Mathematics for Edexcel AS and A-level (ISBN: 0435510983)

Attwood *et al*, *Statistics 1*, Heinemann Modular Mathematics for Edexcel AS and A-level (ISBN: 0435510827)

Other textbooks are available from the college for reference or loan.

Mathematics

A2 specification number 9371 (Edexcel)

Unit 4: Core Mathematics 3 (C3)

(1.5 hour exam; 16.7% A-level weighting). This unit covers algebra and functions, trigonometry, exponentials and logarithms, differentiation and numerical methods. The exam consists of compulsory questions worth 75 marks, with shorter questions at the start of the paper leading to longer, extended questions.

Unit 5: Core Mathematics 4 (C4)

(1.5 hour exam; 16.7% A-level weighting). This unit covers further algebra and functions, binomial expansions, co-ordinate geometry, further differentiation, further integration and vectors. The exam consists of compulsory questions worth 75 marks, with shorter questions at the start of the paper leading to longer, extended questions.

Unit 6: Mechanics 1 (M1) or Statistics 2 (S2)

(1.5 hour exam; 16.7% A-level weighting). Students choose either M1 or S2 as their final unit. M1 covers mathematical models in mechanics, vectors in mechanics, kinematics, dynamics, statics and moments. S2 covers Binomial and Poisson distributions, continuous random variables, continuous distributions and hypothesis testing. For each unit the exam consists of compulsory questions worth 75 marks, with shorter questions at the start of the paper leading to longer, extended questions.

MPW approach to A2 study

Students begin by studying C3. Thereafter a flexible approach is taken to the teaching of C4 and M1 or S2 to make the best use of the time available. Carefully chosen homework reinforces learning in class and regular testing allows the tutor to identify and rectify students' weaknesses quickly. Once the specification has been fully completed, the emphasis shifts to past-paper practice and revision.

A2 course books

The following course books will be provided by MPW:

Pledger *et al*, *Core Mathematics 3*, Heinemann Modular Mathematics for Edexcel AS and A-level (ISBN: 0435510991)

Pledger *et al*, *Core Mathematics 4*, Heinemann Modular Mathematics for Edexcel AS and A-level (ISBN: 0435511009)

Hebborn & Littlewood, *Mechanics 1*, Heinemann Modular Mathematics for Edexcel AS and A-level (ISBN: 0435510746)

Attwood *et al*, *Statistics 2*, Heinemann Modular Mathematics for Edexcel AS and A-level (ISBN: 0435510835)

Other textbooks are available from the college for reference or loan.