

OXFORD

INTERNATIONAL
AQA EXAMINATIONS

INTERNATIONAL A-LEVEL FURTHER MATHEMATICS

(9665)

Outline Schemes of Work

For teaching from September 2017 onwards

For AS exams in June 2018 onwards

For A2 exams in June 2019 onwards

Introduction

These outline schemes of work are intended to help teachers plan and implement the teaching of the Oxford AQA International A-level Further Mathematics specification. The purpose of these outline schemes is to provide advice and guidance to teachers, not to prescribe and restrict their approach to the specification. Each scheme has been produced by a practicing A-level Further Maths teacher. There are obviously many other ways of organising the work, and there is absolutely no requirement to use these schemes.

Scheme 1, AS Further Maths with two teachers

It is possible to teach some of the content alongside A-Level AS, perhaps beginning shortly before half term in Year 12. It is assumed that there is a total of 4 to 4.5 hours per week of contact time and around 36 weeks in the academic year available for teaching. The scheme assumes equal contact time for the two teachers.

Date	Teacher A	Teacher B	Notes
Term 1 Year 12 Starting after first few weeks of term	<p>Roots and coefficients of a quadratic equation. (FP1.4)</p> <p>Complex Numbers. Real and Imaginary Parts. Arithmetic of complex numbers. (FP1.3)</p> <p>Matrix Algebra. Simple transformations using 2x2 matrices. (FPP1.1)</p>	<p>Tree diagrams. Bayes theorem. (FS.1)</p> <p>Introduction to probability generating functions and use to find mean and variance. (FS1.4)</p> <p>Numerical methods to find roots of equations. (FPP1.3)</p> <p>Euler's step-by step method. (FPP1.3)</p>	Can begin immediately after basic work on quadratic equations and probability in A-Level Maths.
Term 2	<p>Summation of series using $\sum r^n$ formulae. (FP1.5)</p> <p>Method of differences. (FP1.5)</p> <p>Coordinate geometry. Simple locus problems. (FP1.2)</p> <p>Loci in the complex plane. (FP1.3)</p>	<p>Gradient of tangent to curve using limit as $h \rightarrow 0$ (FP1.7)</p> <p>Small changes and connected rate of change. (FP1.7)</p> <p>Simple Improper integrals. (FP1.7)</p> <p>Uniform distribution. (FS1.2)</p>	

	<p>Graphs of parabolas, ellipses and hyperbolas. (FP1.1)</p> <p>Graphs of rational functions. (FP1.1)</p> <p>Using quadratic theory to find stationary points etc. (FP1.1)</p> <p>Reducing relation to linear law including use of logarithms. (FPP1.2)</p> <p>Invariant points and lines. (FPP1.1)</p> <p>Shears in 2D. (FPP1.1)</p> <p>Trigonometry. General solutions and exact values of special angles. (FP1.6)</p>	<p>Geometric distribution. (FS1.3)</p> <p>Sum of independent random variables (RVs) using probability generating functions. (FS1.4)</p> <p>Linear combination of discrete RVs. (FS1.5)</p> <p>Dimensional analysis. (FM1.2)</p> <p>Momentum and impulse. (FM1.3)</p> <p>Vectors in mechanics. (FM1.1)</p> <p>Relative velocity. (FM1.1)</p>	<p>Linear laws requires a basic knowledge of logs in base. 10</p> <p>General solutions, etc, could be taught at same time as trigonometrical equations in AS-Level Mathematics.</p>
Term 3	Revision and working through AS papers.	Revision and working through AS papers.	

Scheme 2, A-level Further Maths with two teachers

It is assumed that there are a total for 4 to 4.5 hours per week of contact time and around 36 weeks in the academic year available for teaching. It is also assumed that most of the A-Level Mathematics content will have been completed before the Further Maths A2 topics are introduced. The scheme assumes equal contact time for the two teachers.

Date	Teacher A	Teacher B	Notes
After the AS exams are finished	3D Transformations. (FP2.13) Determinant and inverse of 3×3 matrix. (FP2.13)	Roots and polynomials. (FP2.1)	
Term 1 Year 13 First half term	Eigenvalues and eigenvectors. (FP2.13) Cartesian equation of planes. (FP2.12) Solution of linear equations. (FP2.14)	Maclaurin series. (FP2.6) Use to find limits. (FP2.6) Improper integrals. (FP2.6)	
Second half term	Polar coordinates. (FP2.3) Proof by induction. (FP2.4) Finite series. (FP2.5)	Applications module: Further Statistics 2 or Further Mechanics 2	

Date	Teacher A	Teacher B	Notes
Term 2	<p>Hyperbolic functions introduction including derivatives. (FP2.9)</p> <p>Differential equations – integrating factor. (FP2.10)</p> <p>Inverse trigonometrical functions. (FP2.7)</p> <p>Inverse hyperbolic functions. (FP2.9)</p> <p>Arc length and curved surface area. (FP2.8)</p> <p>De Moivre’s Theorem. (FP2.2)</p> <p>Second order differential equations. (FP2.11)</p> <p>Vector product and applications. (FP2.12)</p> <p>Start revision for June entry.</p>	<p>Continue with:</p> <p>Further Statistics 2</p> <p>or</p> <p>Further Mechanics 2</p>	
Term 3	Continue with revision programme.	Revision for examinations in June.	

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