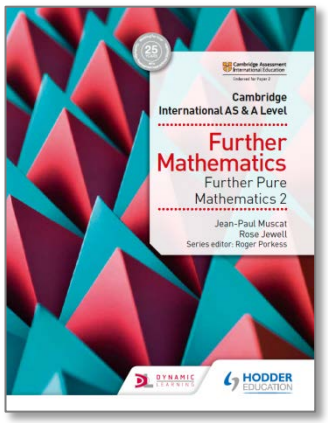

Syllabus Change Mapping Document for *Cambridge International AS & A Level Further Mathematics Further Pure 2 Student's Book*

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We are working with Cambridge Assessment International Education towards endorsement of this forthcoming title

Take mathematical understanding to the next level with this accessible series, written by experienced authors, examiners and teachers.

Find out how our new Further Pure 2 Student's Book covers the changes in the revised Cambridge International AS & A Level Further Mathematics syllabus (9231) from 2020 below. For more information about the full series of four Student's Books and components for this syllabus, go to www.hoddereducation.com/cambridgeasalevelmathematics

Changes to the syllabus for examination from 2020:

Please visit www.cambridgeinternational.org for information about current syllabuses and full details of changes

The syllabus for Further Pure Mathematics 2 is now organised into the following main topics:

2.1 Hyperbolic functions
2.2 Matrices
2.3 Differentiation
2.4 Integration
2.5 Complex numbers
2.6 Differential equations

New areas of study include the following:

New content in syllabus	**Chapter in Hodder Education book**
2.1 Hyperbolic functions • understand the definitions of the hyperbolic functions $\sinh x$, $\cosh x$, $\tanh x$, $\operatorname{sech} x$, $\operatorname{cosech} x$, $\coth x$ in terms of the exponential function • sketch the graphs of hyperbolic functions • prove and use identities involving hyperbolic functions • understand and use the definitions of the inverse hyperbolic functions and derive and use the logarithmic forms	Chapter 1
2.2 Matrices • formulate a problem involving the solution of 3 linear simultaneous equations in 3 unknowns as a problem involving the solution of a matrix equation, or vice versa • understand the cases that may arise concerning the consistency or inconsistency of 3 linear simultaneous equations, relate them to the singularity or otherwise of the corresponding matrix, solve consistent systems, and interpret geometrically in terms of lines and planes • understand the terms 'characteristic equation', 'eigenvalue' and 'eigenvector', as applied to square matrices	Chapter 2

• use the fact that a square matrix satisfies its own characteristic equation	
2.3 Differentiation • differentiate hyperbolic functions and differentiate $\sin^{-1}x$, $\cos^{-1}x$, $\sinh^{-1}x$, $\cosh^{-1}x$ and $\tanh^{-1}x$ • derive and use the first few terms of Maclaurin's series for a function	Chapter 3
2.4 Integration • integrate hyperbolic functions and recognise integrals of functions of the form $\frac{1}{\sqrt{a^2-x^2}}$, $\frac{1}{\sqrt{x^2+a^2}}$ and $\frac{1}{\sqrt{x^2-a^2}}$ and integrate associated functions using trigonometric or hyperbolic substitutions as appropriate • understand how the area under a curve may be approximated by areas of rectangles, and use rectangles to estimate or set bounds for the area under a curve or to derive inequalities or limits concerning sums	Chapter 4
2.5 Complex numbers* • understand de Moivre's theorem, for a positive or negative integer exponent, in terms of the geometrical effect of multiplication and division of complex numbers	Chapter 5
2.6 Differential equations** • find an integrating factor for a first order linear differential equation, and use an integrating factor to find the general solution • find the complementary function for a first or second order linear differential equation with constant coefficients • recall the form of, and find, a particular integral for a first or second order linear differential equation in the cases where a polynomial or ae^{bx} or $a\cos px + b\sin px$ is a suitable form, and in other simple cases find the appropriate coefficient(s) given a suitable form of particular integral • use a given substitution to reduce a differential equation to a first or second order linear equation with constant coefficients or to a first order equation with separable variables	Chapter 6

* Note that the new content is on division and negative integer exponents.

** Note that the new is on integrating factors and first order differential equations.

Topics in the current syllabus which will no longer be covered include:

- **Differentiation and integration**: Content on mean values and centroids removed.