



## Syllabus Change Mapping Document for *Cambridge International AS & A Level Further Mathematics Further Probability & Statistics Student's Book* ISBN: 9781510421813

*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 Probability & Statistics 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](http://www.hoddereducation.com/cambridgeasalevelmathematics)

### **Changes to the syllabus for examination from 2020:**

Please visit [www.cambridgeinternational.org](http://www.cambridgeinternational.org) for information about current syllabuses and full details of changes

The syllabus for Further Probability & Statistics is now organised into the following main topics:

- 4.1 Continuous random variables
- 4.2 Inference using normal and t-distribution
- 4.3  $\chi^2$ -test
- 4.4 Non-parametric tests
- 4.5 Probability generating functions

New areas of study include the following:

New content in syllabus	Chapter in Hodder Education book
<p><b>4.1 Continuous random variables</b></p> <ul style="list-style-type: none"> <li>• use a probability density function which may be defined piecewise;</li> <li>• use the general result <math>E(g(X)) = \int f(x)g(x)dx</math> where <math>f(x)</math> is the probability density function of the continuous random variable <math>X</math>, and <math>g(x)</math> is a function of <math>X</math></li> <li>• understand and use the relationship between the probability density function (PDF) and the cumulative distribution function (CDF), and use either to evaluate probabilities or percentiles</li> <li>• use cumulative distribution functions (CDFs) of related variables in simple cases</li> </ul>	<p>Chapter 1, Section 1.1 Chapter 1, Section 1.2  Chapter 1, Section 1.3  Chapter 1, Section 1.4</p>
<p><b>4.4 Non-parametric tests</b></p> <ul style="list-style-type: none"> <li>• understand the idea of a non-parametric test and appreciate situations in which such a test might be useful</li> <li>• understand the basis of the sign test, the Wilcoxon signed-rank test and the Wilcoxon rank-sum test</li> <li>• use a single-sample sign test and a single-sample Wilcoxon signed-rank test to test a hypothesis concerning a population median</li> </ul>	<p>Chapter 4, Section 4.1 Chapter 4, Sections 4.1,4.3  Chapter 4, Section 4.1</p>

<ul style="list-style-type: none"> <li>use a paired-sample sign test, a Wilcoxon matched-pairs signed-rank test and a Wilcoxon rank-sum test, as appropriate, to test for identity of populations</li> </ul>	Chapter 4, Sections 4.2, 4.3
<p><b>4.5 Probability generating functions</b></p> <ul style="list-style-type: none"> <li>understand the concept of a probability generating function (PGF) and construct and use the PGF for given distributions</li> <li>use formulae for the mean and variance of a discrete random variable in terms of its PGF, and use these formulae to calculate the mean and variance of a given probability distribution</li> <li>use the result that the PGF of the sum of independent random variables is the product of the PGFs of those random variables</li> </ul>	<p>Chapter 5, Sections 5.1, 5.4</p> <p>Chapter 5, Sections 5.2, 5.4</p> <p>Chapter 5, Section 5.3</p>

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

- Further work on distributions
- Bivariate data

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