



ASSESSMENT and  
QUALIFICATIONS  
ALLIANCE

# GCE STATISTICS

## Specification 6380

# Outline Schemes of Work

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## Introduction

The purpose of these outline schemes of work is to provide advice and guidance to teachers, not to prescribe and restrict their approach to the specification. Please bear in mind that there is no requirement to use these schemes, which are suggestions only and are by no means the only approaches possible.

## AS Statistics

The AS statistics course is probably taught in most schools/colleges over a 32 week maximum time period with, say, around 4.5 hours per week typically giving 3 lessons of 1.5 hours each week. This provides around 144 hours teaching per academic year.

The Statistics modules are equally weighted so need approximately equal teaching time. However, the terms are commonly unevenly balanced with an autumn term of 14/15 weeks, a spring term of 12/13 weeks (but with an exam series during that time) and a short summer term of about 5 weeks prior to the main exam period in late May – mid June. Care must be taken to introduce the course gradually with SS1A/B so that students have the basic grounding but also to introduce topics from the second module, SS02, in the autumn term, so that time constraints do not prevent the full course being covered by the summer exam period.

SS1A/B can be successfully taken after one term's study or it may be taken at the end of the year, together with SS02 and SS03.

A suggested outline scheme of work for one teacher taking an AS class throughout the year is shown in the first table.

If two teachers share the AS Statistics teaching, then a suggested scheme of work for an AS class throughout the year is given in the second table.

## AS Statistics – one teacher

Term		Topics / Module	Ref	
<b>Autumn Term</b> Sept/Dec	<b>Weeks</b>	<b>SS1A/B</b>		
	1	Introduction and Collection of data, sampling	10.5	
	2/3	Probability	10.2	
	3/4	Numerical measures	10.1	
	5/6	Discrete probability distributions - Binomial	10.3	
	6/8	Continuous probability distributions - Normal and Central limit theorem	10.4 10.5	
	9/10	Confidence intervals for means	10.5	
	10/12	Correlation and regression	10.6	
	13	Revision and Mock SS1A/B exam		
		<b>SS02</b>		
	14	Sampling	11.2	
	15	Time series analysis - basics	11.1	
	15 weeks			
	<b>Spring Term</b> Jan/April	<b>Weeks</b>		
		16/17	Revision for SS1A/B exam if taken in January	
17		Time series analysis – advanced	11.1	
18/19		Discrete probability distributions: Poisson	11.3	
20/21		Interpretation of data. Diagrams	11.4	
21/23		Hypothesis testing	11.5	
23/24		Revision and Mock SS02 exam		
		<b>SS03</b>		
24/25		Hypothesis tests for association using $\chi^2$ distribution for analysis of contingency tables	12.1	
26		Correlation – Spearman's rank	12.3	
27		Hypothesis tests on Spearman and product moment correlation coefficients	12.3	
12 weeks				
<b>Summer Term</b> April/May	<b>Weeks</b>			
	28	Distribution free methods: Single sample tests - Sign and Wilcoxon	12.2.1	
	29	Distribution free methods: Experimental design	12.2.2	
	29/30	Distribution free methods: Paired and two independent sample tests	12.2.2 12.2.3	
	31	Distribution free methods: More than two independent samples - Kruskal-Wallis test	12.2.4	
	32	Revision and Mock SS03 exam		
	33/34	Revision sessions on whole course		
	5 weeks			

## AS Statistics – two teachers

<b>Teacher 1</b>			
<b>Term</b>		<b>Topics/Module</b>	<b>Ref</b>
<b>Autumn Term</b>	<b>Week</b> 1/4	<b>SS1A/B</b> Numerical measures and Collection of data	10.1, 10.5
	4/9		
15 weeks	9/12	Continuous probability distributions: Normal and CLT	10.4, 10.5
	13	Confidence intervals for means	10.5
		Revision and Mock SS1A/B exam	
	14/15	<b>SS02</b> Sampling	11.2
<b>Spring Term</b>	<b>Week</b> 16/17	Revision for SS1A/B exam if taken in January	11.5
	17/21		
	22		
	23/25	<b>SS03</b> Distribution free methods:	12.2.1
12 weeks	26/27	Single Sample tests - Sign and Wilcoxon Distribution free methods: Experimental design Also introduce Paired tests	12.2.2
<b>Summer Term</b>	<b>Week</b> 28/29	Distribution free methods:	12.2.2
		Paired tests and Two independent sample tests	12.2.3
	30/31	Independent samples: Kruskal-Wallis test	12.2.4
	32	Revision and Mock SS03 exam	
	33/34	Revision sessions on whole course	

## AS Statistics – two teachers (cont)

<b>Teacher 2</b>			
<b>Term</b>		<b>Topics/Module</b>	<b>Ref</b>
<b>Autumn Term</b>	<b>Week</b> 1/4	<b>SS1A/B</b> Probability	10.2
	4/8	Discrete probability distributions: Binomial	10.3
	8/12	Correlation and regression	10.6
	13	Revision and Mock SS1A/B exam	
	14/15	<b>SS02</b> Time series analysis - basics	11.1
<b>Spring Term</b>	<b>Week</b> 16/17	Revision for SS1A/B exam if taken in January	
	17/18	Time series analysis – advanced	11.1
	19/22	Discrete probability distributions: Poisson	11.3
	23/24	Interpretation of data. Diagrams	11.4
	24	Revision and Mock SS02 exam	
	25/27	<b>SS03</b> Using $\chi^2$ distribution for analysis of contingency tables	12.1
<b>Summer Term</b>	<b>Week</b> 28/30	Correlation - Spearman's rank hypothesis tests	12.3
	30/31	Product moment correlation coefficients	12.3
	32	Revision and Mock SS03 exam	
	33/34	Revision sessions on whole course	

## A2 Statistics units

The A2 statistics course is probably taught in most schools/colleges over a 33 week maximum time period with, say, around 4.5 hours per week typically giving 3 lessons of 1.5 hours each week. This provides around 148.5 hours teaching per academic year. The terms are commonly unevenly balanced with many centres utilising 2 weeks post exam time in the summer term of year 12 to start A2 teaching and then an autumn term of 14/15 weeks, a spring term of 12/13 weeks (but with an exam series during that time) and a short summer term of about 5 weeks prior to the main exam period in mid-June. SS04 can be successfully taken after one term's study or it may be taken at the end of the year, together with SS05 and SS06.

The Statistics modules are equally weighted and therefore SS04 can be taught for the majority of the autumn term but some topics from the module, SS05, will also need to be introduced in the autumn term.

A suggested scheme of work for one teacher taking an A2 class throughout the year is shown in the following table.

Term		Topics / Module	Ref
<b>Summer term after the AS exams</b>	<b>Weeks</b> 37/38	<b>SS04</b> Distributional approximations	13.2
<b>Autumn term Sep/Dec</b>	<b>Weeks</b> 1/2	Estimation – Approx confidence intervals for binomial and Poisson	13.3
	3/4	Estimation – Confidence intervals for mean based on sample from normal distribution with unknown standard deviation – $t$ distribution	13.3
	5	Hypothesis test for mean based on sample from normal distribution with unknown standard deviation – $t$ distribution	13.4
	6/8	Hypothesis tests for binomial proportion and Poisson mean – exact or normal approximation	13.4
	9/10	Continuous probability distributions – linear combinations	13.1
	11/12	Revision and Mock SS04 exam	
	12/13	<b>SS05</b> Continuous probability distributions – rectangular and exponential	14.1
	13/14	Confidence intervals for variance and standard deviation based on sample from normal distribution – using $\chi^2$	14.2
15 weeks	14/15	Hypothesis tests for variance and standard deviation based on sample from normal distribution – using $\chi^2$	14.3

<b>Spring Term</b> <b>Jan/April</b>	<b>Weeks</b> 16/18	Revision for SS04 exam if taken in January – to include revision of all hypothesis testing (to include tests on variance and standard deviation)	
	19/22	$\chi^2$ Goodness of fit test – for binomial, Poisson, rectangular, exponential, normal and specified discrete	14.3
	22/23	Two independent samples test – for variances, using $F$ and for means, using $z$ or $t$	14.3
	24	Revision and Mock SS05 exam	
	25	<b>SS06</b> Experimental design	15.1
	25/26	Analysis of paired comparisons using $t$ test	15.1
12 weeks	27	Revision of sign test and Wilcoxon signed-rank test Statistical process control – control charts for means	15.3
<b>Summer Term</b>	<b>Weeks</b>		
<b>April / May</b>	28	Statistical process control – control charts (all types)	15.3
	29/30	Acceptance sampling	15.4
	30/33	Analysis of variance – one-factor, two-factor and latin square design	15.2
5 weeks	34	Revision and Mock SS06 exam Revision sessions on whole course	