



Changes to Examination Papers for 2012

1. New papers for 2012:

IS1168 Introduction to computer system architecture and programming

Candidates should answer **FOUR** of the following **EIGHT** questions: **TWO** questions from **Section A** and **TWO** questions from **Section B**. All questions carry equal marks.

Candidates should note that there is a sample exam paper in the subject guide.

DV2169 Economic policy analysis in international development

You must answer at least **THREE** questions from the following six options.
Please answer carefully and provide examples from the readings whenever possible.

You must answer at least **ONE** of your three questions from Part A.

Candidates should note that there is a sample exam paper in the subject guide.

MT3170 Discrete Mathematics and Algebra

This examination paper contains **EIGHT** questions. You may attempt as many questions as you wish, but only your best **SIX** questions will count towards the final mark. All questions carry equal numbers of marks.

Candidates should note that there is a sample exam paper in the subject guide.

DV1171 Introduction to international development

Candidates should answer **THREE** of the following **NINE** questions: including **AT LEAST ONE EACH** from section A and Section B. All questions carry equal marks.

Candidates should note that there is a sample exam paper in the subject guide.

MT1173 Algebra

Candidates should answer **all FIVE** questions. All questions carry equal marks (20 marks each).

Calculators may not be used for this paper.

Candidates should note that there is a sample exam paper in the subject guide.

MT1174 Calculus

Candidates should answer **all FIVE** questions. All questions carry equal marks (20 marks each).

Calculators may not be used for this paper.

Candidates should note that there is a sample exam paper in the subject guide.

2. Changes to existing papers:

ST104a Statistics 1

Candidates should answer **THREE** of the following **FOUR** questions: **QUESTION 1** of Section A (50 marks) and **TWO** questions from Section B (25 marks each).

Candidates are strongly advised to divide their time accordingly.

New for 2012: In addition to the extracts from statistical tables, from 2012 a list of formulae will be provided in the examination. This formula sheet will be found after the final question of this paper. An example of this formula sheet can be found under the 'Examination preparation resources' section of the ST104a VLE course page or at the end of this exam changes document.

Graph paper is provided at the end of this question paper. If used, it must be detached and fastened securely inside the answer book.

A calculator may be used when answering questions on this paper and it must comply in all respects with the specification given with your Admission Notice. The make and type of machine must be clearly stated on the front cover of the answer book.

EC3015 Economics of Labour

Candidates should answer **SEVEN** of the following **NINE** questions: all **FIVE** of Section A (50 marks in total) and any **TWO** from Section B (25 marks each).

Candidates should note that this format was used in 2010 and should have been used in 2011 but was not. It differs from the sample exam paper detailed in the subject guide.

EC3016 International Economics

Candidates should answer **FOUR** of the following **TEN** questions: **QUESTION 1** of Section A (40 marks) and **THREE** questions from Section B (20 marks each).

Candidates should note that this format has been used since 2008, except in 2011 when a different rubric was used. This above format differs from the sample exam paper detailed in the study guide

IR3083 International Political Theory

Candidates should answer **THREE** of the following **TWELVE** questions. All questions carry equal marks.

FN3142 Quantitative finance

Candidates should answer **THREE** of the following **SIX** questions. All questions carry equal marks.

A calculator may be used when answering questions on this paper and it must comply in all respects with the specification given with your Admission Notice. The make and type of machine must be clearly stated on the front cover of the answer book.

EC3099 Industrial Economics

Candidates should answer **FOUR** of the following **EIGHT** questions, including at least **ONE** from Section A, and at least **ONE** from Section B. All questions carry equal marks.

IR2137 Foreign Policy Analysis

Candidates should answer **FOUR** of the following **EIGHT** questions. All questions carry equal marks.

Notice to candidates of ST04a Statistics 1

To coincide with the new subject guide for ST104a Statistics 1, 2012 sees the introduction of a formula sheet (as below) for the course examination. In previous years, candidates were awarded marks for correctly remembering formulae and writing them down as part of their solutions. Now that a formula sheet is provided, such 'formulae marks' are no longer necessary. Instead, the Examiners are keen to give candidates the opportunity to demonstrate how the formulae can be applied when performing statistical inference. The sorts of applications that can be expected in the examination can be found throughout the course subject guide.

On balance, there is no significant change to mark-earning opportunities. Although a formula sheet is provided, candidates still need to identify which one is appropriate for a given question. As always, the Examiners would like to remind candidates of the importance of clearly showing all their workings in solutions as partial credit can still be awarded for solutions which, although incorrect, demonstrate the correct 'thought process'.

ST104a Statistics 1

Examination Formula Sheet

Expected value of a discrete random variable:

$$\mu = E[X] = \sum_{i=1}^N p_i x_i$$

Standard deviation of a discrete random variable:

$$\sigma = \sqrt{\sigma^2} = \sqrt{\sum_{i=1}^N p_i (x_i - \mu)^2}$$

The transformation formula:

$$Z = \frac{X - \mu}{\sigma}$$

Finding Z for the sampling distribution of the sample mean:

$$Z = \frac{\bar{X} - \mu}{\sigma/\sqrt{n}}$$

Finding Z for the sampling distribution of the sample proportion:

$$Z = \frac{P - \pi}{\sqrt{\frac{\pi(1-\pi)}{n}}}$$

Confidence interval endpoints for a single mean (σ known):

$$\bar{x} \pm z \frac{\sigma}{\sqrt{n}}$$

Confidence interval endpoints for a single mean (σ unknown):

$$\bar{x} \pm t_{n-1} \frac{s}{\sqrt{n}}$$

Confidence interval endpoints for a single proportion:

$$p \pm z \sqrt{\frac{p(1-p)}{n}}$$

Sample size determination for a mean:

$$n \geq \frac{Z^2 \sigma^2}{e^2}$$

Sample size determination for a proportion:

$$n \geq \frac{Z^2 p(1-p)}{e^2}$$

Z -test of hypothesis for a single mean (σ known):

$$Z = \frac{\bar{X} - \mu}{\sigma/\sqrt{n}}$$

t -test of hypothesis for a single mean (σ unknown):

$$t = \frac{\bar{X} - \mu}{S/\sqrt{n}}$$

Z-test of hypothesis for a single proportion:

$$Z \cong \frac{p - \pi}{\sqrt{\frac{\pi(1-\pi)}{n}}}$$

t-test for the difference between two means (variances unknown):

$$t = \frac{(\bar{X}_1 - \bar{X}_2) - (\mu_1 - \mu_2)}{\sqrt{S_p^2 \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}}$$

Pooled variance estimator:

$$S_p^2 = \frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}$$

Confidence interval endpoints for the difference in means in paired samples:

$$\bar{x}_d \pm t_{n-1} \frac{s_d}{\sqrt{n}}$$

Pooled proportion estimator:

$$P = \frac{R_1 + R_2}{n_1 + n_2}$$

χ^2 test of association:

$$\sum_{i=1}^r \sum_{j=1}^c \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

Spearman rank correlation:

$$r_s = 1 - \frac{6 \sum_{i=1}^n d_i^2}{n(n^2 - 1)}$$

Z-test for the difference between two means (variances known):

$$Z = \frac{(\bar{X}_1 - \bar{X}_2) - (\mu_1 - \mu_2)}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$$

Confidence interval endpoints for the difference between two means:

$$(\bar{x}_1 - \bar{x}_2) \pm t_{n_1+n_2-2} \sqrt{s_p^2 \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}$$

t-test for the difference in means in paired samples:

$$t = \frac{\bar{X}_d - \mu_d}{S_d/\sqrt{n}}$$

Z-test for the difference between two proportions:

$$Z = \frac{(P_1 - P_2) - (\pi_1 - \pi_2)}{\sqrt{P(1-P) \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}}$$

Confidence interval endpoints for the difference between two proportions:

$$(p_1 - p_2) \pm z \sqrt{\frac{p_1(1-p_1)}{n_1} + \frac{p_2(1-p_2)}{n_2}}$$

Sample correlation coefficient:

$$r = \frac{\sum_{i=1}^n x_i y_i - n\bar{x}\bar{y}}{\sqrt{(\sum_{i=1}^n x_i^2 - n\bar{x}^2)(\sum_{i=1}^n y_i^2 - n\bar{y}^2)}}$$

Simple linear regression line estimates:

$$b = \frac{\sum_{i=1}^n x_i y_i - n\bar{x}\bar{y}}{\sum_{i=1}^n x_i^2 - n\bar{x}^2}$$

$$a = \bar{y} - b\bar{x}$$