December 10, 2005

MSc and Diploma in Applied Statistics 2005: Examiners' Report

Part 1

A Statistics

(1) Numbers and percentages

MSc in Applied Statistics

	Number				Percentage			
Category	2004/5	2003/4	2002/01	2001/2	2004/5	2003/4	2002/01	2001/2
Distinction	3	3	7	5	11	11	25	33
Pass	22	23	21	10	81	85	75	67
Did not complete	1	1	0	0	4	4	0	0
Fail	1	0	0	0	4	0	0	0

Diploma in Applied Statistics

There were no candidates in 2005.

(2) Vivas

None

(3) Double marking of scripts

All scripts and dissertations were double marked.

B New Examining Methods and Procedures

Examining methods and proceedures were similar to those in 2003/4.

C Examining Conventions

No changes are proposed.

D Examining Conventions - communication with candidates

The Chairman sent a notice to candidates (Appendix). Conventions were set out in the course handbook distributed to students in week 0 of Michaelmas term 2004.

Part II

A General Comments on the Examinations

The overall standard of the candidates was satisfactory. The standard of the dissertations was more variable than in previous years resulting in substantial mark differences by pairs of assessors. When this occurred another examiner considered the thesis and the examiners agreed on a fair mark.

Scripts seemed to be handelled carefully by exam schools this year, and there was no evidence of any missing questions, as there was in 2003/4.

B Equal Opportunities

Category	Male	Female
Distinction	2	1
Pass	11	11
Did not complete	0	1
Fail	0	1

C Candidate's performance

Paper (i) Principles of statistical analysis

Candidates were asked to attempt all six questions. All did so.
Rounded summary statistics (marks out of 20) were:

Question	Topic	no	Median	IQR
1	Statistical Methods	26	8	7
2	Statistical Methods	26	11	8
3	Statistical Theory	26	13	9
4	Statistical Theory	26	3	3
5	Time Series	26	15	3
6	Survival Analysis	26	11	7

Paper (ii) Further statistical methodology

Candidates were asked to attempt two core questions.
Candidates were asked to attempt a total of six questions.

Question	Topic	no	Median	IQR
	Core			
1	Multivariate Analysis	16	11	8
2	Computer Intensive Statistics	14	8	9
3	Further Statistical Methods	3	13	12
4	MCMC and Applied Bayesian Statistics	22	9	10
5	Decision Analysis	23	11	8
	Options			
6	Models for Disease	9	16	3
7	Pattern Recognition and Expert Systems	19	5	4
8	Pattern Recognition and Expert Systems	3	6	5
9	Combinatorial Optimization	0		
10	Combinatorial Optimization	0		
11	Actuarial Science	7	12	3
12	Actuarial Science	9	14	6
13	Epidemiological Methods	4	7	12
14	Mathematical Genetics	19	7	10

D Comments on Papers and Questions

Paper i

The questions were generally very satisfactorily done, with some high marks obtained, apart from question 4, a question on fiinding a Bayesian posterior credible interval.

Paper ii

The standard of answers was more variable than in paper i. All candidates attempted at least two core questions as requested. Core questions were generally well answered. Marks for option questions were not as high as for core questions. Two acturial questions had seven and nine attempts compared to a question with two attempts in 2003/4. There were no attempts at the two Combinatorial Optimization questions.

Practicals

Marks for practicals taken throughout the course were generally high compared to exam marks.

Dissertations

Dissertations were assessed on the following topics:

An analysis of Lloyds Realistic Disaster Scenarios using generalised estimating equations.
Analysis of phase duration in drug development.
Ancestral inference in microsatellite models in population genetics.
Aspects of pharmaceutical research project modelling.
Bayesian Model Averaging.
Developing SANT software.
Inferring the time to the most recent common ancestor from samples of DNA data.
Estimating Market Risk.
Explaining local authorities performance improvement.
Geographic inference from genetic data.
International balance sheet statistics - a data exploration.
Investigating the effect of Biotin on multiple lameness events in dairy cows.
Investigating the effect of project management and language choices in software development.
Investigating the effects of team size and project duration in software development.
Measures for dependence in social networks analysis
Modelling mortality for reviewable annuity rates.
The potential for erythropoietin and other factors to protect humans from hypoxic injury in altitude acclimatization.
The predictive value of symptoms and their combinations in the diagnosis of malignant and benign colorectal disease.
Regression dilution in survival models.
Regulation and patterns of gene expression in Drosophila testes.
The role of nitrogen-fixers in Amazonian forests.
Screening financial data.
The study of investigating environmental effects on chickens.
Temporally and spatially constrained independent component analysis for functional magnetic resonance imaging.
Using bootstrapping to estimate confidence intervals in the Housing Benefit review.
Using time series methods for modelling claim reserves in general insurance

E Examiners

R. C. Griffiths (Chairman)
S. L. Lauritzen
G. P. Nason (External)
B. D. Ripley

Appendix

Communication to candidates

Subject: MSc Examination papers
Notice to candidates for the MSc and Diploma in Applied Statistics
Examination papers
The examinations papers in 2005 will be similar in style to the papers in 2004, rather than papers in earlier years, because of the changed course structure in the last two years. The examination questions are intended to be capable of being answered in 30 minutes.
Paper (i) will consist of six questions of equal weight, and candidates are expected to attempt them all. The Examiners' main criterion will be the total mark of all questions attempted.
Paper (ii) will consist of five 'core' and eight 'optional' questions of equal weight, approximately one question for eight to ten hours of lectures (or equivalent) (although this will not be applied mechanically). Candidates will be expected to attempt two 'core' questions. The Examiners' main criterion will be the sum of the marks on the two highest-scoring 'core' questions and the four highest scoring questions remaining. Serious attempts at other questions will be taken into account at the borderlines between pass/fail and pass/distinction.
Note that in both examinations:
EACH QUESTION SHOULD BE ANSWERED IN A SEPARATE BOOKLET.
If booklets are used up during the exam ask the examination school staff for more booklets.
R. C. Griffiths
Chairman of Examiners

Examining Conventions (MSc Handbook)

EXAMINATION CONVENTIONS: MSC AND DIPLOMA IN APPLIED STATISTICS

For MSc candidates the overall assessment is based on:

1. Paper (i) Principles of Statistical Analysis
2. Paper (ii) Further Statistical Methodology
3. Assessed Practical Work
4. Dissertation.

Each of (1)-(4) has equal weight, i.e. each contributes 25% to the overall MSc assessment.
The guidelines are 75 hours of lectures or equivalent work for each of (1) and (2), with 1 question per 8-10 hours work. In recent years (3) has been made up of 2 practical assignments in Michaelmas Term, 2 practical assignments in Hilary Term, and a Practical Assessment in week 1 of Trinity Term, with half of the weight of (3) being given to the Trinity Term Practical Assessment, the other half to the 4 practical assignments from Michaelmas/Hilary Terms. You will be told if there are any changes to these guidelines.
Candidates for the Diploma take (1)-(3) only, and the corresponding weights for (1), (2) and (3) are 37.5%, 25% and 37.5% respectively.
For both MSc and Diploma, candidates can pass, pass with distinction, or fail. Distinction candidates will show excellence over a wide range of topics. Passing candidates will at least show satisfactory work over a reasonable range of topics. These descriptions are of overall performance: weaker performance in part of the overall assessment can be compensated for, if the overall performance merits it. Candidates who just fail the MSc can be allocated a pass on the Diploma if they show understanding and competence equivalent to passing the Diploma.
In assessing dissertations, the three main criteria will be:

(a) discussion of the background and aims of the project,
(b) correctness and depth of data analysis, development of theory, and software,
(c) clarity, structure and presentation.

In particular, substantial weight will be given to (c).