DEPARTMENT OF STATISTICS

Paper 475.330 : Advanced Statistical Modelling

Course Description : Semester 1, 1999

1. TOPICS STUDIED

This course provides an introduction to the process and procedures of statistical data analysis. The topics to be covered include multiple regression, analysis of variance and analysis of covariance. We will also consider some extensions of this kind of analysis to generalised linear models, including log-linear models and logistic regression models.

- An Introduction to UNIX and S-PLUS
- Multiple Linear Regression
- Regression Diagnostics
- Generalised Linear Models
- Graphical Methods

2. COURSE NOTES

There will be two sets of notes for this class. The first of these sets of notes:

Advanced Statistical Modelling by Lee, Triggs and Ihaka ($15),

documents the statistical methodology for the first half of the course. It is available from the SMIS Resource Centre in the basement of the Maths/Physics building. Some copies of last years version of *Advanced Statistical Modelling* (including a set of corrections) are available for $10. The second:

Notes on S-PLUS by Bill Venables and Dave Smith ($12),

provides detailed information on the S-PLUS statistical computing environment. It is not required but provides a useful reference for this course.

3. COMPUTING FACILITIES

The class will be using the Mathematics and Statistics advanced computing laboratory (Room G45) which is directly above the large undergraduate computing laboratory. There will be a short introduction to the use of the laboratory. The laboratory has been booked from 2-4:30 on Thursday (4 March) and from 1-4 on Friday (5 March) for this purpose. Plan to drop by for 30-60 minutes during one of these periods.

4. ASSIGNMENTS

Assignments will typically involve carrying out an analysis of a set of data and then writing a report on your analysis. The report should following the following guidelines.

1. They must be typed. If you have a PC and word-processing software you should probably use that to type your reports, but there will be facilities in the teaching laboratory for typesetting.

2. Your reports should **not** consist of annotated computer output. They should be written in non-technical language and explain the analysis for someone who is informed about the subject matter, but not necessarily an expert on statistics.

3. A description of the technical part of the analyses should be given as an appendix to your report. Again, annotated output is not acceptable.

Assignments should be handed in to the appropriate box in the basement of the Maths/Physics building by the SMIS Resource Centre, by 4pm on the following due dates:

Assignment	Due date
1	Mon 22 March
2	Thurs 15 April
3	Thurs 6 May
4	Thurs 20 May

5. ASSESSMENT

The final grade will be computed as follows:

25% Assignments + 15% Test + 60% Examination

with the caveat that you must get 50% in the final exam in order to pass the course.
The terms test will be held during the lecture period on Tuesday 27 April.

6. TIMETABLE

The class is scheduled for Tuesday through Friday at 1pm in MLT3. One of these hours will be a tutorial hour when you can ask questions about work covered in class, or problems arising in the computer lab. This and office hours will be discussed in class.

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