Lecturer: Anthony C. Brooms  
http://www.bbk.ac.uk/ms/brooms/acb.htm  
Office Hours: I am very happy to meet with students outside the normal lecture sessions. However, because I operate according to a very tight schedule, I must insist that meetings are by prior arrangement only - this can be done via email.

This is part of the Statistical Analysis module for 1st year students on the:  
M.Sc. in Applied Statistics [+Operational Research/Stochastic Modelling]

Teaching  
- 11 × 3 Hour Teaching Sessions between 6 and 9p.m.  
  - Room B35 Malet Street Main Building - Monday 3rd November (only!!!)  
  - Ramsey Lecture Theatre, Christopher Ingold Building, Gordon Street, U.C.L.-Every Monday (except Monday 3rd November!!!)  
- 5 Computing Practical Sessions - Room 321 Malet Street Main Building - Tuesdays between 6 and 9p.m. - Weeks 1 to 5 only.

Outline of Topics to be covered:  
1. Basic statistical concepts and introduction to S-PLUS.  
2. The completely randomized design, one-way ANOVA and treatment effects.  
3. Comparison of treatment effects: multiple comparisons and orthogonal contrasts.  
5. Factorial Models.  
7. Multiple linear regression and the general linear model.  
8. ANOVA for multiple linear regression. Stepwise procedures.  
10. Sample Surveys I: Basic Principles and Methods.  
11. Sample Surveys II: Stratification.

Examination Methods  
Section A questions on paper 2 of the written examination in June  
+ 1 piece of coursework (to be handed out at the end of term).

Lectures  
A set of notes will be provided at the start of each lecture, or at the start of each major topic. Notes will be written up on the board, and sometimes on the OHP to emphasize particular points. Students can read around the course by using one or more of the recommended texts, perhaps for extra clarification; however, the notes are intended to be fairly self-contained.
**Recommended Texts**

Later editions of these may be available from bookstores, however, those listed below should suffice.

**Statistical Analysis and Design of Experiments:**


**The S-PLUS statistical package**


**Statistical Tables**

We will use the following statistical tables:

- D. V. Lindley & W. F. Scott *New Cambridge Statistical Tables*.

These are the ones that will be available at examination.
Statistical Computing with S-PLUS
The main statistical package for use on this module will be S-PLUS.
S-PLUS for Windows is available for use on College workstations. As a registered Birkbeck student, you may also obtain a CD with this software from ITS. The software can be installed and used on your own PC for the duration of your programme of study provided that you have an internet connection so that the license arrangements can be enacted.

Using S-PLUS on a workstation
The College workstation rooms in the Birkbeck College Main Building are similar in layout. Relevant ITS documentation may be obtained from the ITS Reception and Helpdesk in Room 151. After you have logged on, you may open S-PLUS via the Start button in the bottom left hand corner of the screen:

Start > Programs > Statistical Applications > . . . . .
then search for S-PLUS 7.0 (- or later version if available, but not S-PLUS console).

In the workstation sessions, you will be able to get to grips with S-PLUS at your own pace. There is a very good help facility within the package: individual commands can be looked up on Help > Available Help > Language Reference > . . . . . for example. One approach to learning to use S-PLUS is to start working through the book by KRAUSE & OLSON The Basics of S and S-PLUS. You should also work through the exercises provided.

The Commands window (accessible from the Window menu in S-PLUS) may be used for typing in the S-PLUS commands, and in the lecture notes that is the way in which things will be presented. You also have the easier option of using the GUI (graphical user interface) with its windows, menus, and toolbars. However, for more advanced S-PLUS features and programming, knowledge of the command language will be necessary. One aspect of the GUI that is particularly useful is the Data Set window, in which data may be entered and edited conveniently.

- If you are a new user of the Birkbeck workstations, note that you must use the N: drive for storing personal files; if you are using a temporary account, you will need to save your work on portable media such as a floppy or data stick.

- Useful functions in S-PLUS include:
  objects() which gives a listing of the objects on your workspace;
  rm may be used to remove objects that are no longer required;
  help(...) will provide information on the specified function or topic;
  read.table may be used to read a data file and create an S-PLUS data frame from it. However, you will probably find it easier to use the Import Data item from the File Menu in the GUI.