



Graduate School

GSM005

Quantitative Data Analysis

Module Guide

Semester B, 2011-12

Essential information

Module Leader

Professor Allan Brimicombe

Room: KD2.28, Knowledge Dock Building, Docklands Campus

Telephone: 020 8223 2352

Email: a.j.brimicombe@uel.ac.uk

Allan Brimicombe is available for consultation by appointment - email.

Additional Tutor

Dr. Yang Li

Room: KD2.28, Knowledge Dock Building, Docklands Campus

Telephone: 020 8223 2603

Email: y.li@uel.ac.uk

Module Administrator

Caroline Lake

Graduate School (EB.1.43), Docklands Campus

Telephone: 020 8223 2467

Email: c.lake@uel.ac.uk

Where and when

Session times: Ten Thursdays: 18:00-21:00 in BS.3.04 and IT Cluster 3

Assessment

Unit Title: Quantitative Data Analysis	Unit Code: GSM005 Credit: 30	Unit Leader: Professor Allan Brimicombe
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Assessment methods which enable student to demonstrate the learning outcomes for the Unit: Portfolio of laboratory exercise results. An individual data analysis project report. ~4000 words + graphics, charts, maps etc.	Weighting: 40% 60%
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Portfolio of Laboratory Exercise Results

Submit: **4th May 2012**

Each week a new topic will be considered and an exercise set to be carried out during the supervised Lab session, to be finished prior to the next class. The results of these exercises and short reflections upon them should be entered into a portfolio. The portfolio should be kept succinct and not bulked up with printed copies of data sets etc. Marks will be awarded for completion of exercises, appropriate presentation of the results (including conciseness) and for the perceptiveness of the reflections.

Individual Data Analysis Project

Submit: **4th May 2012**

You should identify a data set of their choosing for analysis. This data set may, or may not, be central to your research at your choosing – but it should be realistic. In other words it should be of a size and content likely to reveal interesting ideas and/or relationships capable of being analysed using the techniques covered up to week 12 in the timetable for this unit. The data set should be assessed for reliability, explored, hypotheses raised and tested. The report should provide the reader with a clear understanding to the background and theoretical positions underscoring the analysis, a justification for the form of analysis undertaken and a presentation of the results. There should be a bibliography set out according to accepted academic conventions.

All work must be submitted through UEL Plus before midnight on the due date.

GSM005 Quantitative Data Analysis

Semester B - 2011/12

**Professor Allan Brimicombe
Dr Yang Li**

Docklands KD2.28, a.j.brimicombe@uel.ac.uk, ext. 2352
Docklands KD2.28, y.li@uel.ac.uk, ext. 2603

Thursdays: 18:00-21:00 in BS.3.04 with lab session in IT Cluster 3

week 1	week 2	week 3	week 4	week 5	week 6	week 7	week 8	week 9	week 10	Easter Break	week 11	week 12
26-Jan-12	02-Feb-12	09-Feb-12	16-Feb-12	23-Feb-12	01-Mar-12	08-Mar-12	15-Mar-12	22-Mar-12	29-Mar-12		19-Apr-12	26-Apr-12
Introduction	Databases:	Measures of Central Tendency	Exploratory Data Analysis	Presentation of Quantitative Data	Hypothesis Formulation	(no class)	Sample Size	Building Models	(no class)		Building Models	Building Models
Res. Design	Building	Probability		Making Maps	Significance Testing (nonparametric)		Significance Testing (parametric)	Factor Analysis			ANOVA	Regression
Data types	Joining							Clustering				
Quant<>Qual	Querying											

———— **Portfolio of Exercise Results** —————→

Individual Project —————→

Module Title: Quantitative Data Analysis Methods (QMS)	Module Code: GSM005 Level: M Credit: 30 ECTS credits: 15	Module Leader: Professor Allan Brimicombe Additional tutor: Dr Yang Li
Pre-requisite: None		Excluded Combination: None
Main Aim(s) of the Module:		
This module aims to provide an understanding of how quantitative data is analysed in social science research, to develop the necessary practical skills through project work using key software including Excel, SPSS, and Access, and confidence in handling large quantitative datasets.		
Main Topics of Study:		
<ul style="list-style-type: none"> ▪ Quantitative research processes; relationship with qualitative research; mixed mode approaches. ▪ Sources of data and official statistics; handling large data sets. ▪ Data quality (metadata), cleaning and outlier detection; data integration issues. ▪ Building a database; database query and exporting tables to other software. ▪ Exploration of univariate, bivariate and multivariate relationships. ▪ Creating data visualisations: tables, graphs and maps. ▪ Formulating and testing hypotheses: parametric (incl. ANOVA) and non-parametric techniques. ▪ Deriving statistical models: factor analysis, clustering, regression, decision trees; multi-level models. ▪ Presentation and evaluation of quantitative analyses. 		
Learning Outcomes for the Module		
At the end of this Module, students will be able to:		
<i>Knowledge</i>		
1 Understand the benefits and limitations of quantitative methods for promoting understanding and knowledge production in the social sciences and their relationship to other methodological approaches		
2 Understand the dual role of exploratory and confirmatory approaches to data analysis		
3 Understand the assumptions underlying parametric and non-parametric approaches to statistical testing		
<i>Thinking skills</i>		
4 Develop a strategy for data analysis		
5 Interpret the results of quantitative analyses		
6 Evaluate the quantitative results of others		
<i>Subject-based practical skills</i>		
7 Use basic software such as Excel, SPSS and Access		
8 Access data sources, build a database, conduct queries and export tables to other software		
9 Develop quantitative graphics for inclusion in papers and thesis		
<i>Skills for life and work (general skills)</i>		
10 Approach quantitative research methods and data handling with confidence		
11 Present quantitative analyses to technical and non-technical audiences		
Teaching/ learning methods/strategies used to enable the achievement of learning outcomes:		
Predominantly delivered through workshops incorporating components of lecture, practical exercises and reflective discussion. An individual data analysis project reinforces the workshops and allows deeper exploration of the techniques and approaches. Students will be expected to present their project to peers in a short presentation. The teaching will include a number of real data analysis case studies from research and consultancy projects.		
Students will focus on using Excel, SPSS and Access as the main software for practical work but will also be introduced to MapInfo and Atlas/ti.		

Assessment methods which enable student to demonstrate the learning outcomes for the Module:	Weighting:	Learning outcomes
Portfolio of laboratory exercise results.	40%	2,3,4,5,6,7,9
An individual data analysis project report. ~4000 words + graphics, charts, maps etc.	60%	1,4,5,6,7,8,9,10,11

Indicative Reading for this Module:

Bryman, A. (2008) *Social Research Methods*. Oxford University Press, Oxford

Colman, A. and Pulford, B. (2006) *A Crash Course in SPSS for Windows*. 3/e, Blackwell, Oxford.

Cramer, D. (2003) *Advanced Quantitative Data Analysis*. Open University Press, Maidenhead.

Guidici, P. (2003) *Applied Data Mining: Statistical Methods for Business and Industry*. Wiley, Chichester.

Hartwig, F. & Dearing, B. (1979) *Exploratory Data Analysis*. Sage, California.

Neuman, W. (2006) *Social Research Methods*. 6/e, Pearson International, Boston.

Newton, R. & Rudestam, K. (1999) *Your Statistical Consultant*. Sage, California.

Tolmie, A; Muijs, D. & McAteer, E (2011) *Quantitative Methods in Educational and Social Research*. OUP, Maidenhead.

Tufte, E. (1983) *The Visual Display of Quantitative Information*. Graphics Press, Connecticut.

Indicative Teaching and Learning Time (10 hrs per credit):	Activity
Student/Tutor Contact Time: 36	Activity: (e.g. lectures/seminars/tutorials/workshops/studio work etc) Workshops (lecture, practical, discussion)
Student Learning Time: 120 60 84	Activity: (e.g. seminar reading and preparation/assignment preparation/ background reading/ group work/portfolio/diary etc) Individual project work (including necessary reading). Work on completing the portfolio of lab exercises. Background reading for the main topics of study.

Indicative learning and teaching time (10 hrs per credit):	Activity
Student/tutor interaction, some of which may be online:	lectures/seminars/tutorials/workshops 42 hours
Student learning time:	Seminar and workshop reading and preparation/assignment preparation/ background reading: 258 hours
Total hours	300 hours