



The University of Southern Queensland

Course specification

The current and official versions of the course specifications are available on the web at <http://www.usq.edu.au/coursespecification/current>.
Please consult the web for updates that may occur during the year.

Description: Statistics for Researchers

Subject	Cat-nbr	Term	Mode	Units	Campus
STA	3302	1, 2010	ONC	1	Toowoomba

Academic group:	FOSCI
Academic org:	FOS003
Student contribution band:	6
ASCED code:	010103

REQUISITES

Pre-requisite: STA2300

RATIONALE

This course is aimed at, but is not restricted to, students enrolled in or planning to enrol in honours or graduate studies involving project or research work of a quantitative nature. In particular it targets students in Business, Commerce, Sciences, Engineering and Education. The course introduces a range of statistical techniques suitable for application to the analysis of research data and relevant to understanding statistical analyses reported in research literature. The course also prepares students for studying more advanced statistical methods as available in courses such as STA8302 Advanced Statistical Methods.

SYNOPSIS

The course covers exploratory data analysis, data screening, parametric and nonparametric procedures, count data, measures of association and correlation, multiple regression and analysis of variance. A data-driven approach is adopted and extensive use made of computer software. Previous statistical knowledge to the level of STA2300 Data Analysis is assumed.

OBJECTIVES

On successful completion of this course students should be able to:

1. make appropriate use of one or more statistical computer packages;
2. select appropriate statistical tools to perform a range of exploratory and confirmatory analyses;
3. screen data as appropriate to justify various inferential procedures;
4. understand the differences between observational and experimental studies;
5. interpret results of analyses in non-technical language;
6. follow statistical arguments in reports, journal articles and presentations.

TOPICS

	Description	Weighting (%)
1.	Introduction to appropriate software. Creating, importing and exporting data files. File editing and manipulation. Data screening. Accuracy, missing values, data types, outliers, normality, linearity, homoscedasticity. Univariate and multivariate data. Transformations: suitability, implementation and interpretation. Exploratory Data Analysis. Appropriate graphical, tabular and numerical representation of data.	20.00
2.	Introductory inference. Significance testing and estimation. P-values. Statistical versus practical significance. Parametric versus nonparametric procedures.	15.00
3.	One and two-sample inference for location. Screening for assumptions. Robustness. Sample size determination.	15.00
4.	Bivariate relationships, correlations, associations. Chi-square analyses. Goodness of fit.	5.00
5.	Multiple regression. Analysis and interpretation. Modelling. Dummy variables. Residual analysis. Leverage. Influence. Multicollinearity. Selection methods. Robust methods.	20.00
6.	One-way analysis of variance. Screening for assumptions. Regression modelling. Interpretation. Planned and unplanned comparisons. Robustness considerations. Kruskal-Wallis Test.	15.00
7.	Multi-way analysis of variance. Interaction. Regression modelling.	10.00

TEXT and MATERIALS required to be PURCHASED or ACCESSED

ALL textbooks and materials are available for purchase from USQ BOOKSHOP (unless otherwise stated). Orders may be placed via secure internet, free fax 1800642453, phone 07 46312742 (within Australia), or mail. Overseas students should fax +61 7 46311743, or phone +61 7 46312742. For costs, further details, and internet ordering, use the 'Textbook Search' facility at <http://bookshop.usq.edu.au> click 'Semester', then enter your 'Course Code' (no spaces).

REFERENCE MATERIALS

Reference materials are materials that, if accessed by students, may improve their knowledge and understanding of the material in the course and enrich their learning experience.

STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Assessments	20.00
Examinations	3.00
Lectures	26.00
Private Study	90.00
Tutorials	26.00