



The University of Southern Queensland

Course Specification

Description: Statistics for Researchers

Subject	Cat-Nbr	Class	Term	Mode	Units	Campus
STA	3302	10392	1, 2002	ONC	1.00	TWMB

Academic Group:	FOSCI
Academic Org:	FOS003
HECS Band:	2
ASCED Code:	010103

STAFFING

Examiner: Paul Fahey
Moderator: Ashley Plank

PRE-REQUISITES

Pre-requisite: STA 2300

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 STA4302 Advanced Statistical Methods.

SYNOPSIS

This course is designed for, but not restricted to, students enrolling in honours or graduate studies involving project or research work of a quantitative nature. A data-driven approach is adopted and extensive use made of computer software. Previous statistical knowledge to the level of 64001 Data Analysis is assumed. The course covers exploratory data analysis, data screening, parametric and nonparametric procedures, count data, measures of association and correlation, multiple regression, analysis of variance and introductory multivariate methods.

OBJECTIVES

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

- make appropriate use of one or more statistical computer packages;

- select appropriate statistical tools to perform a range of exploratory and confirmatory analyses;
- screen data as appropriate to justify various inferential procedures;
- understand the differences between observational and experimental studies;
- interpret results of analyses in non-technical language;
- 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

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.

To be advised.

STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Assessment	20
Examinations	3
Lectures	28
Private Study	90
Tutorial	28

ASSESSMENT DETAILS

Description	Marks Out of	Wtg(%)	Required	Due Date
ASSIGNMENT 1	20.00	20.00	Y	10 May 2002 (see note 1)
ASSIGNMENT 2	20.00	20.00	Y	14 Jun 2002 (see note 2)
EXAM - 3 HOUR RESTRICTED	60.00	60.00	Y	END S1 (see note 3)

NOTES:

1. Further details about the due dates are detailed in the assessment section of the Course Specifications.
2. Further details about the due dates are detailed in the assessment section of the Course Specifications.
3. Examination dates will be available during the Semester. Please refer to Examination timetable when published.

OTHER REQUIREMENTS

- 1 Attendance: It is the student's responsibility to attend classes and activities to ensure that they have the best chance to meet the objectives of the course and be well informed of course- related activities and administration.
- 2 Minimum Requirements to Pass the Course: To obtain a passing grade in this course, students must gain at least 50% of the marks available for each assessment item.
- 3 Assignments: The due date for assessments is the date by which the student must dispatch an assignment to USQ. The onus is on the student to provide proof of the dispatch date, if required by the examiner. Students must retain a copy of any assignment submitted. This must be produced within 48 hours if required by the examiner. Assignments submitted after the Due Date will be penalised 10% for each working day late unless the student can convince the examiner that such a penalty is not warranted. In accordance with University's Policy on Assignments (Regulation 5.6.1), the examiner of a course may grant an extension of the due date of an assignment in extenuating circumstances. This policy may be found in the USQ Handbook, the Distance Education Student Guide and the Faculty of Sciences'

Orientation Handbook for new on-campus students. All students are advised to study and follow the guidelines associated with this policy.

- 4 Restricted Examination: a restricted examination is an examination where only those materials specified in the examination paper are permitted during the examination. The only materials that students may bring into the examination room and use in the restricted examination are: (a) writing materials (non-electronic and free from materials which could give the student an unfair advantage in the examination); (b) calculators which cannot hold textual information (students must indicate on their exam paper the make and model of any calculator(s) they use during the examination). These details may be checked by the invigilator of the examination. Any supplementary or deferred examinations for this course will be held at a time to be decided by mutual agreement between the examiner and student.
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