



The University of Southern Queensland

Course Specification

Description: Statistical Inference

Subject	Cat-Nbr	Class	Term	Mode	Units	Campus
STA	2302	14393	2, 2002	EXT	1.00	TWMBA

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

STAFFING

Examiner: Shahjahan Khan

Moderator: Peter Dunn

PRE-REQUISITES

Pre-requisite: STA 2301

RATIONALE

Methods of Statistical Inference are the basis of much decision making. A basic understanding of the concepts and techniques of statistical inference is highly desirable for a practitioner of statistics.

SYNOPSIS

This course provides the students with a firm grounding in the theory and methods of statistical inference and builds on the material covered in STA2301 Distribution Theory. Parametric and non-parametric applications are covered.

OBJECTIVES

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

- determine point and interval estimators for distributional parameters and discuss the properties and distributions of those estimators;
- understand the principles of hypothesis testing and power of a test;
- apply the principles of hypothesis testing to a wide range of situations including parametric and non-parametric testing;
- solve for and make inferences about the parameters of a linear model.

TOPICS

Description	Weighting (%)
1. Sampling Distributions chi-squared, t- and F- distributions	10.00
2. Estimation properties of estimators, methods of maximum likelihood and moments, interval estimation, sample size determination	20.00
3. Hypothesis Testing concepts, Type I and II errors, normal-based tests of proportions, means and variances, large and small samples, one and two samples, Neyman-Pearson Lemma, likelihood ratio tests	20.00
4. Distribution-Free tests concepts, one and two sample tests of location, goodness-of-fit tests	20.00
5. One-way analysis of variance Concept, F-test, Kruskali-Wallis test	10.00
6. Regression the linear model, matrix approach to ordinary least squares, inference in the linear model.	20.00

TEXT and MATERIALS required to be PURCHASED or ACCESSED:

Books can be ordered by fax or telephone. For costs and further details use the 'Book Search' facility at <http://bookshop.usq.edu.au> by entering the author or title of the text.

Wackerly, D.D., Mendenhall, W. & Schaeffer, R.L 1996, *Mathematical Statistics with Applications*, 6th edition, Duxbury, Boston.

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.

Berry, D.A. & Lindgren, B.W 1996, *Statistics: Theory and Methods*, Duxbury, Belmont.

Freund, J. E. & Walpole, R.E 1987, *Mathematical Statistics*, 4th edition, Prentice-Hall, Englewood Cliffs.

Larsen, R.J. & Marx, M.L 1986, *An Introduction to Mathematical Statistics and Its Applications*, 2nd edition, Prentice-Hall, Englewood Cliffs.

STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Assessment	40
Examinations	3
Private Study	125

ASSESSMENT DETAILS

Description	Marks Out of	Wtg(%)	Required	Due Date
ASSIGNMENT 1	8.00	8.00	Y	23 Aug 2002
ASSIGNMENT 2	8.00	8.00	Y	20 Sep 2002
ASSIGNMENT 3	8.00	8.00	Y	25 Oct 2002
3 HR RESTRICTED EXAMINATION	76.00	76.00	Y	END S2 (see note 4)

NOTES:

4. 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 participate actively in all classes scheduled for them, and to study all material provided to them or required to be accessed by them to maximize their chance of meeting the objectives of the course and to be informed of course-related activities and administration.
- 2 Requirements to Complete Satisfactorily Each Assessment Item: To complete satisfactorily the assignments in this course, students must obtain at least half of the total marks available.
- 3 Minimum Requirements to Pass the Unit: To be certain of obtaining a passing grade in this course, students must (a) gain at least 50% of the total marks available and (b) obtain at least 50% of the available marks in the examination.
- 4 Assignments: The due date for an assignment is the date by which a student must despatch it to USQ. The onus is on the student to provide proof of the despatch date, if requested by the examiner. Students must retain a copy of each item submitted for assessment. This must be produced within five days if required by the examiner. Extensions for assignment submission may be granted in extenuating circumstances. The decision to grant or refuse an extension is made by the examiner. Students should be aware that an application for an extension does not guarantee that an extension will be granted. Students apply for extension by either applying at the time of submitting an assignment or applying in writing prior to submitting an assignment. All relevant documentation should accompany the application. Assignments submitted after the due date without an extension approved by the examiner, may be penalised 10% for each working day late. No further assignments will be accepted for assessment purposes after assignments or model solutions have been released, except in extenuating circumstances. In accordance with University's Assignment Extension Policy (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.

- 5 Examination: 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 candidates may use in the restricted examination for this course are calculators which cannot hold textual information (students must indicate on their examination paper the make and model of any calculator(s) they use during the examination). Candidates may take an appropriate non-electronic translation dictionary into the examination. This will be subject to perusal and may be removed from the candidate's possession until appropriate disciplinary action is completed if found to contain material that could give the candidate an unfair advantage. A list of the materials candidates may access in the restricted examination will be on the frontispiece of the examination paper.
 - 6 Supplementary and Deferred Examinations: Students who obtain an overall passing mark, but who do not perform satisfactorily in the examination, may, at the discretion of the examiner, be granted a supplementary examination. Students will be granted a deferred examination only if they perform satisfactorily in the assignments. Any supplementary or deferred examinations for this course will be held in the examination period for the semester of the next offering of the course.
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