

MACQUARIE UNIVERSITY, SYDNEY  
Division of Economic and Financial Studies  
**STAT175: Gambling Sport and Medicine**  
Unit Outline: Second Semester 2007  
Convenor: Dr Petra Graham



You should read this unit outline carefully. It contains important information about the unit. If anything in it is unclear, please consult one of the teaching staff in the unit.

#### ABOUT THIS UNIT

STAT175 is a general education unit, recommended for students in all fields of study. There are no prerequisites or assumed background knowledge. The unit gives you an opportunity to investigate three interesting areas where statistics plays an important role: games of chance and gambling, sporting performance and medical studies. At the same time, you will be introduced to a range of statistical ideas and methods that will be useful in many other areas, professionally and personally.

#### TEACHING STAFF

Our lecturing team consists of (left to right in the photos below):

- Dr Petra Graham (convenor):  
room E4A 510; phone 9850 6138; e-mail [pgraham@efs.mq.edu.au](mailto:pgraham@efs.mq.edu.au)
- Dr Frederick Wong (lecturer): room E4A 507, ph 9850 8544, e-mail [fwong@efs.mq.edu.au](mailto:fwong@efs.mq.edu.au)
- Mr Xavier Shea will take some of our laboratory classes: his phone number is 0414 240 490

Formal consultation times will be posted on the website and on our office doors.



#### UNIT WEB PAGE

The web page for this unit can be found at: [www.stat.mq.edu.au/ug/units/stat\\_units100/stat175](http://www.stat.mq.edu.au/ug/units/stat_units100/stat175) (you can get there conveniently from the Department of Statistics website [www.stat.mq.edu.au](http://www.stat.mq.edu.au) by selecting Undergraduate, then Units and then Stat175). *You should check this web page regularly* (at least once a week) as we will post notices, lecture notes/summaries, lab materials and solutions. There is a WebCT page for the unit that contains some useful background material from previous semesters, as well as some simulations of different gambling games. We will be using this at various times during the course. You can access this from the address <http://online.mq.edu.au> (or from the Stat175 web page). You will be asked for your Student ID number and myMQ Portal password. If you have any problem accessing this website, you should go to the Online Teaching Facility support web page at <http://online.mq.edu.au/docs/teconf.html> .

## CLASSES

You will have one 3-hour lecture time, and you will be enrolled in one 1-hour laboratory class:

- Lectures: Tuesday 3–6pm C5C T1 (these also contain a tutorial component)
- Labs: Tuesday 12-1pm and 2-3pm (E4B 102), Wednesday 1-2pm and 2-3pm (E4B 111). All labs start in week 2.

We firmly believe that you will learn more and enjoy the course more if you attend all the lectures and labs: try it and see if we are right!

## LEARNING OUTCOMES

After successfully completing this unit, you will be able to:

- explain the meaning of common statistical terms that appear in gambling, sport and medicine
- apply a range of statistical and probability techniques in these and other areas
- use a spreadsheet and a statistical computer package to carry out statistical investigations
- communicate the results of your statistical investigations clearly
- discuss the role that statistics plays in gambling, sporting performance and medical studies
- discuss ethical problems raised by the use of statistics in gambling, sport and medicine
- continue any future statistical studies with increased confidence

All academic programs at Macquarie seek to develop students' generic skills in a range of areas. One aim of this unit is that you will develop your skills in literacy, numeracy and information technology; groupwork and communication; problem solving and critical thinking; and creativity.

## REQUIRED AND RECOMMENDED TEXTS AND/OR MATERIALS

The textbook is available in the Co-op Bookshop, and you will need to get yourself a copy:

- J. S. Croucher (2003). *Gambling and Sport: A statistical approach*. Macquarie University.
- Some useful background references are (others will be given in classes):
- D. Rowntree (1981). *Statistics without Tears*. Penguin [QA276.R66]
  - M. Bland (2000). *An Introduction to Medical Statistics*. Oxford Uni Press [RA409.B55/2000]
  - R. Peck *et al.* (eds.) (2006). *Statistics: A Guide to the Unknown 4<sup>th</sup> Edition*. Duxbury Press [QA276.16.S843 2006]

## ASSESSMENT AND ITS RELATION TO LEARNING OUTCOMES

The assessment in this unit consists of the following four components:

- Assignment 1: 15% due by 4pm Thursday 13 September 2007
- Assignment 2: 15% due by 4pm Thursday 25 October 2007
- Two labs to hand in: 5%+5% dates advised *during the previous week* on the unit webpage
- Final examination: 60% a *handwritten* A4 page, both sides, can be taken in and used

You can do the assignments in a group of 2 or 3 people, or as an individual. We would strongly encourage you to work in a group: it's more fun, you can learn from your fellow students, you get practice in the important skills of groupwork – and group assignments usually get higher marks!

*You need to hand the assignments in at ERIC (E4B 106) by the due date and time, and the labs to your tutor at the end of your lab class.* We will return marked assignments as soon as possible. To pass the unit, you need to submit the assignments and selected labs, and perform satisfactorily on the final exam. Assignments or labs that are not submitted on time may not be accepted later without appropriate documentation. The exam will assess the range of learning outcomes in a formal and individual context, while the assignments and labs will focus on assessing outcomes in a less formal and group setting. Only two labs are assessed formally, but you can get feedback on others if you hand them in to your tutor at the end of the class.

## TEACHING AND LEARNING STRATEGIES

*Our role:* In the 3-hour “lecture” class, we will present new material in the form of lectures, and we will include a tutorial component where you can practice the techniques and ask questions. In the laboratory classes, we will help you work practically, solving problems and analysing data. If you hand in the labs to your tutor at the end of the class, he/she will give you written feedback by the following class. We will answer your questions at consultation times and by e-mail.

*Your role:* We expect that you will prepare by reading set material in advance, attend classes, attend laboratory sessions and participate in the various learning activities. You will work individually and in groups with your fellow students. We also expect that you will make a good attempt at the assignments and final exam.

## EXAMINATIONS – GENERAL INFORMATION

The University Examination period for the second semester 2007 is from 14 November – 30 November.

You are expected to present yourself for examination at the time and place designated in the University Examination Timetable. The timetable will be available at <http://www.timetables.mq.edu.au/exam> in draft form approximately eight weeks before and in final form approximately four weeks before the commencement of the examinations.

The only exception to not sitting an examination at the designated time is because of documented illness or unavoidable disruption. In these circumstances you may wish to consider applying for Special Consideration. Information about this is given at <http://www.reg.mq.edu.au/Forms/APSCons.pdf>. If a Supplementary Examination is granted as a result of the Special Consideration process the examination will be scheduled after the conclusion of the official examination period. You are advised that it is Macquarie University policy not to set early examinations for individuals or groups of students. All students are expected to ensure that they are available until the end of the teaching semester, that is the final day of the official examination period (*and Stat175 examinations are usually near the end of the period!*).

## PLAGIARISM – IMPORTANT NOTES

The University defines plagiarism in its rules: “Plagiarism involves using the work of another person and presenting it as one’s own.” Plagiarism is a serious breach of the University’s rules and carries significant penalties. You must read the University’s practices and procedures on plagiarism. These can be found in the *Handbook of Undergraduate Studies* or on the web at: <http://www.student.mq.edu.au/plagiarism/>.

The policies and procedures explain what plagiarism is, how to avoid it, the procedures that will be taken in cases of suspected plagiarism, and the penalties if you are found guilty. Penalties may include a deduction of marks, failure in the unit, and/or referral to the University Discipline Committee.

## UNIVERSITY POLICY ON GRADING

Academic Senate has a set of guidelines on the distribution of grades across the range from fail to high distinction. Your final result will include one of these grades plus a standardised numerical grade (SNG). On occasion your raw mark for a unit (i.e., the total of your marks for each assessment item) may not be the same as the SNG which you receive. Under the Senate guidelines, results may be scaled to ensure that there is a degree of comparability across the university, so that units with the same past performances of their students should achieve similar results.

It is important that you realise that the policy does not require that a minimum number of students are to be failed in any unit. In fact it does something like the opposite, in requiring examiners to explain their actions if more than 20% of students fail in a unit. The process of scaling does not change the order of marks among students. A student who receives a higher raw mark than another will also receive a higher final scaled mark.

## STUDENT SUPPORT SERVICES

Macquarie University provides a range of Academic Student Support Services. Details of these services can accessed at <http://www.student.mq.edu.au>. For students taking units in the Division of Economic and Financial Studies, more detailed information is given electronically at [http://www.efs.mq.edu.au/student\\_support](http://www.efs.mq.edu.au/student_support), or live in ERIC in E4B 106.

## Stat175 Gambling, Sport and Medicine – Semester 2, 2007

<b>Date</b> <i>(Tuesday)</i>	<b>Wk</b>	<b>Title</b>	<b>Stats topics</b>	<b>Lab class</b> <i>(Tuesday/Wednesday)</i>
31 July	1	Lotto & Lotteries	Introduction Counting techniques	<i>No lab first week</i>
7 Aug	2	Keno	Describing gambling games Probability intervals	Lotto (Excel)
14 Aug	3	Roulette	House margin Chances of being ahead	Keno (Excel)
21 Aug	4	Sports betting	Odds and prices Bookmaking	Sports betting (Excel)
28 Aug	5	Sport and binomial	Binomial distribution Olympic records	World Cup Hockey (Excel)
4 Sep	6	Sport and Poisson	Poisson distribution Chi-squared goodness of fit	Soccer Goals (Excel)
11 Sep	7	Sports performance	Normal distribution Z-scores and comparisons	<i>(lab time for assignment)</i> <i>(Assignment 1 due Thur)</i>
18 Sep		Mid-semester break		
25 Sep		Mid-semester break		
2 Oct	8	Health data	Data types & summaries Comparing means	Pulse rates (SPSS)
9 Oct	9	Medical studies 1	Types of studies Odds ratios	Ear infections (SPSS)
16 Oct	10	Medical studies 2	Chi-square tests Crosstabulations	Gestational diabetes (SPSS)
23 Oct	11	Medical testing	Diagnostic testing Characteristics of tests	<i>(lab time for assignment)</i> <i>(Assignment 2 due Thur)</i>
30 Oct	12	Forensic statistics	Statistics and the law Bayesian approaches	Sleep apnoea (SPSS)
6 Nov	13	Revision	Olympics data Winning at gambling	<i>(lab time for revision)</i>