



STAT175

Gambling, Sport and Medicine

S1 Evening 2017

Dept of Statistics

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General Information

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NA

NA

Credit points

3

Prerequisites

Corequisites

Co-badged status

Unit description

This is a general education unit and recommended for students in all fields of study. There is no assumed knowledge. It is particularly useful for those seeking a better understanding of statistics, using attractive and relevant ideas from areas of popular interest. The unit includes analysis of popular gambling games; the chance of success is calculated along with the testing of various strategies for winning. Statistics also plays an important role in the development of sporting strategies and certain national sports are examined. The use of statistics in the important field of medical science is covered. Ethical aspects of gambling, sport and medicine are discussed.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

Learning Outcomes

On successful completion of this unit, you will be able to:

Be able to explain the meaning of common statistical terms that appear in gambling, sport and medicine

Be able to apply a range of statistical and probability techniques in these and other areas

Be able to use a spreadsheet and a statistical computer package to carry out statistical investigations

Be able to communicate the results of your statistical investigations clearly

Be able to discuss the role that statistics plays in gambling, sporting performance and medical studies

Be able to discuss ethical problems raised by the use of statistics in gambling, sport and medicine

Be able to continue any future statistical studies with increased confidence

General Assessment Information

No extensions will be considered for any assessment task without an application of **disruption to studies**. Students who submit their assessment tasks after the deadline for the task will be awarded a mark of 0 for the assessment, except for cases in which an application of **disruption to studies** has been received and approved.

For your assignments, you may be asked to provide a soft copy as well. Please keep it handy and ready to submit, if requested.

Assessment Tasks

Name	Weighting	Hurdle	Due
Practical Participation	12%	No	Weekly (Wednesday or Thursday)
Labs	8%	No	Weekly (Wednesday or Thursday)
Assignment 1	10%	No	3rd April (week 6)
Assignment 2	10%	No	29th May (week 12)
Final Examination	60%	No	Examination period

Practical Participation

Due: **Weekly (Wednesday or Thursday)**

Weighting: **12%**

To obtain full marks, students need to attend the class on time and participate in their practical.

On successful completion you will be able to:

- Be able to apply a range of statistical and probability techniques in these and other areas
- Be able to use a spreadsheet and a statistical computer package to carry out statistical investigations
- Be able to communicate the results of your statistical investigations clearly
- Be able to discuss ethical problems raised by the use of statistics in gambling, sport and medicine
- Be able to continue any future statistical studies with increased confidence

Labs

Due: **Weekly (Wednesday or Thursday)**

Weighting: **8%**

These lab works completed during your practical class must be submitted to your tutor at the end of your practical session for formal marking. To obtain full marks, students should prepare, prior to their practical class, by revising the relevant lecture material in the preceding weeks and trying the sample lab on iLearn. Also bringing lecture notes from the preceding weeks along to the class may help you further. There is no "group work" assessment in this unit. All work is to be the student's own.

Some of the practical lab exercises are carried out using Microsoft Excel, others using Minitab; you should install a copy of Minitab onto your own computer (download from the Student Portal).

On successful completion you will be able to:

- Be able to explain the meaning of common statistical terms that appear in gambling, sport and medicine
- Be able to apply a range of statistical and probability techniques in these and other areas
- Be able to use a spreadsheet and a statistical computer package to carry out statistical investigations
- Be able to communicate the results of your statistical investigations clearly
- Be able to discuss the role that statistics plays in gambling, sporting performance and medical studies

Assignment 1

Due: **3rd April (week 6)**

Weighting: **10%**

Submit a printed copy of your assignment in at the Science & Engineering Student Centre, C7A Student Connect, together with a cover sheet downloaded from: <https://students.mq.edu.au/study/exams-and-results/assignment-cover-sheets> by 2pm on the due date. *It must be **word-processed*** or it will not be marked. There is no "group work" assessment in this unit. All work is to be the student's own. Students who have not submitted the assignment prior to the deadline will be awarded a mark of zero for the assignment, except for cases in which an application for **disruption to studies** is made and approved.

Marked assignments will be returned to students during the practical class the following week, and the tutor will give detailed feedback on the assignment during that class. These solutions will *not* be available elsewhere (will not be published on iLearn).

On successful completion you will be able to:

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

Assignment 2

Due: **29th May (week 12)**

Weighting: **10%**

Submit a printed copy of your assignment in at the Science & Engineering Student Centre, C7A Student Connect, together with a cover sheet downloaded from: <https://students.mq.edu.au/study/exams-and-results/assignment-cover-sheets> by 2pm on the due date. *It must be **word-processed*** or it will not be marked. There is no "group work" assessment in this unit. All work is to be the student's own. Students who have not submitted the assignment prior to the deadline will be awarded a mark of zero for the assignment, except for cases in which an application for **disruption to studies** is made and approved.

Marked assignments will be returned to students during the practical class the following week, and the tutor will give detailed feedback on the assignment during that class. These solutions will

not be available elsewhere (will not be published on iLearn).

On successful completion you will be able to:

- Be able to apply a range of statistical and probability techniques in these and other areas
- Be able to use a spreadsheet and a statistical computer package to carry out statistical investigations
- Be able to communicate the results of your statistical investigations clearly
- Be able to discuss the role that statistics plays in gambling, sporting performance and medical studies
- Be able to continue any future statistical studies with increased confidence

Final Examination

Due: **Examination period**

Weighting: **60%**

A 3 hour final examination (with an additional 10 minutes' reading time) for this unit will be held during the University's mid-year Examination period. The final examination will cover all topics dealt within the unit. Students may bring into the exam **one piece of paper up to A4 size** on which you may **handwrite** anything you like on **both sides**. No other notes or books are allowed.

You are expected to present yourself for examination at the time and place designated in the University Examination Timetable and this includes weekends. The timetable will be available in Draft form approximately eight weeks before the commencement of the examinations and in final form approximately four weeks before the commencement of the examinations at:

<http://www.timetables.mq.edu/exam>

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 **disruption to studies**.

If you notify the University of your disruption to studies for your final examination, you must make yourself available for the week of July 24 - 28, 2017. If you are not available at that time, there is no guarantee an additional examination time will be offered. Specific examination dates and times will be determined at a later date.

On successful completion you will be able to:

- Be able to explain the meaning of common statistical terms that appear in gambling, sport and medicine
- Be able to apply a range of statistical and probability techniques in these and other areas
- Be able to communicate the results of your statistical investigations clearly
- Be able to discuss the role that statistics plays in gambling, sporting performance and medical studies

Delivery and Resources

Required Text

We will be using the e-textbook, **Kj Byun and Peter Petocz (2013). Taking Your Chances in Gambling, Sport and Medicine** for lectures and also notes for practical classes. Please see

<http://www.lulu.com/content/e-book/taking-your-chances-in-gambling-sport-and-medicine/13942040>

Classes

You will have one 3-hour lecture, and you will be enrolled in one 1-hour tutorial(practical) class:

- Lectures: Monday 6pm to 9pm E7B T5 (these also contain a tutorial component)
- Practicals: Wednesday 6pm (E4B 208), 7pm (E4B 208) and Thursday 6pm (E4B 208) - based on student numbers another class (Thu 7pm) may be scheduled.

– practicals start in week 2

The timetable for classes can be found on the University web site at: http://students.mq.edu.au/student_admin/timetables

Teaching and Learning Strategy

Students should attend all lectures and practicals as it is an internal unit. In the lecture we will present new material and include a tutorial component where you can practice the techniques and ask questions. The lectures will follow the chapters from the e-textbook, "Taking Your Chances in Gambling, Sport and Medicine" closely. In the practical classes, we will help you work practically, solving problems and analysing data using Microsoft Excel and Minitab.

Recommended texts that may be helpful

- D. Rowntree (1981). *Statistics without Tears*. Penguin [QA276.R66]
- M. Bland (2000). *An Introduction to Medical Statistics*. Oxford University Press [RA409.B55/2000]
- R. Peck *et al.* (eds.) (2006). *Statistics: A Guide to the Unknown 4th Edition*. Duxbury Press [QA276.16.S843 2006]

Technology Used and Required

The web page for this unit can be found at: <http://handbook.mq.edu.au/2017/Units/UGUnit/STAT175>

The iLearn site for STAT175 and can be accessed at: <https://ilearn.mq.edu.au/login/MQ/>.

Students should check the site regularly to find the latest announcements, lecture handouts, sample labs and assignments. In addition, always check the site on the day of the lecture for announcements, etc.

However, you should at all times use your Macquarie University student e-mail account when contacting us. E-mails from hotmail, yahoo and similar accounts are often stopped by our spam filter, so we may not get to read them. Furthermore, you should check and read your Macquarie University student e-mail on a regular basis (at least twice a week).

Unit Schedule

Stat175 Gambling, Sport and Medicine – Session 1, 2017

<i>Date (Monday)</i>	<i>Wk</i>	<i>Chapter No and Title</i>	<i>Stats topics</i>	<i>Lab and Assignment Due</i>
27 Feb	1	Lotto & Lotteries	Introduction Counting techniques	
6 March	2	Keno	Describing gambling games Probability intervals	1. Lotto and combinations (Excel)
13 March	3	Sport and Binomial	Binomial distribution Olympic records	2. Random variables and Keno (Excel)
20 March	4	Sports performance	Normal distribution Z-scores and comparisons	3. World Cup Hockey (Excel)
27 March	5	Health Surveys	Data types & summaries Comparing means	Lab time for assignment 1 preparation
3 April	6	Medical studies	Types of studies Odds ratios	(Assignment 1 due Mon) 4. Pulse rates (Minitab)

10 April	7	Roulette	House margin Chances of being ahead	5. Births and Diabetes (Minitab)
17 April		Mid-semester break		
24 April		Mid-semester break		
1 May	8	Sport and Poisson	Poisson distribution Chi-squared goodness of fit	Assignment 1 solution discussion.
8 May	9	Testing Independence	Cross tabulations Chi-square tests	6. Soccer Goals (Excel)
15 May	10	Sports Betting	Odds and prices Bookmaking	7. Surfing and Health (Minitab)
22 May	11	Medical Testing	Diagnostic testing	Lab time for assignment 2 preparation
29 May	12	Forensic Statistics	Forensic Statistics	(Assignment 2 due Mon) 8. Sports betting (Excel)
5 June	13		Summary and revision	Assignment 2 solution discussion and revision.

From week 2 through to week 13, all practical lab exercises will be collected at the end of your practical session.

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](#). Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy http://mq.edu.au/policy/docs/academic_honesty/policy.html

Assessment Policy http://mq.edu.au/policy/docs/assessment/policy_2016.html

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Complaint Management Procedure for Students and Members of the Public http://www.mq.edu.au/policy/docs/complaint_management/procedure.html

Disruption to Studies Policy (in effect until Dec 4th, 2017): http://www.mq.edu.au/policy/docs/disruption_studies/policy.html

Special Consideration Policy (in effect from Dec 4th, 2017): <https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/special-consideration>

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of Policy Central.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/support/student_conduct/

Results

Results shown in *iLearn*, or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit ask.mq.edu.au.

Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to improve your marks and take control of your study.

- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/

[offices_and_units/information_technology/help/](#).

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.

Graduate Capabilities

Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

Learning outcomes

- Be able to communicate the results of your statistical investigations clearly
- Be able to discuss the role that statistics plays in gambling, sporting performance and medical studies

Assessment tasks

- Practical Participation
- Assignment 2

Capable of Professional and Personal Judgement and Initiative

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing environments.

This graduate capability is supported by:

Learning outcomes

- Be able to use a spreadsheet and a statistical computer package to carry out statistical investigations
- Be able to discuss ethical problems raised by the use of statistics in gambling, sport and medicine

Assessment tasks

- Assignment 1
- Assignment 2

Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

Learning outcomes

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

Assessment tasks

- Labs
- Assignment 1
- Assignment 2
- Final Examination

Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

Learning outcomes

- Be able to apply a range of statistical and probability techniques in these and other areas

- Be able to use a spreadsheet and a statistical computer package to carry out statistical investigations
- Be able to discuss the role that statistics plays in gambling, sporting performance and medical studies
- Be able to continue any future statistical studies with increased confidence

Assessment tasks

- Practical Participation
- Assignment 1
- Assignment 2
- Final Examination

Problem Solving and Research Capability

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

Learning outcomes

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

Assessment tasks

- Practical Participation
- Assignment 1
- Assignment 2
- Final Examination

Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to

read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

Learning outcome

- Be able to discuss the role that statistics plays in gambling, sporting performance and medical studies

Assessment tasks

- Labs
- Assignment 1
- Assignment 2
- Final Examination

Engaged and Ethical Local and Global citizens

As local citizens our graduates will be aware of indigenous perspectives and of the nation's historical context. They will be engaged with the challenges of contemporary society and with knowledge and ideas. We want our graduates to have respect for diversity, to be open-minded, sensitive to others and inclusive, and to be open to other cultures and perspectives: they should have a level of cultural literacy. Our graduates should be aware of disadvantage and social justice, and be willing to participate to help create a wiser and better society.

This graduate capability is supported by:

Learning outcomes

- Be able to apply a range of statistical and probability techniques in these and other areas
- Be able to discuss the role that statistics plays in gambling, sporting performance and medical studies

Assessment tasks

- Practical Participation
- Labs
- Assignment 2
- Final Examination

Socially and Environmentally Active and Responsible

We want our graduates to be aware of and have respect for self and others; to be able to work with others as a leader and a team player; to have a sense of connectedness with others and country; and to have a sense of mutual obligation. Our graduates should be informed and active participants in moving society towards sustainability.

This graduate capability is supported by:

Learning outcomes

- Be able to apply a range of statistical and probability techniques in these and other areas
- Be able to discuss the role that statistics plays in gambling, sporting performance and medical studies
- Be able to continue any future statistical studies with increased confidence

Assessment tasks

- Practical Participation
- Labs
- Assignment 1
- Final Examination