STAT175

Gambling, Sport and Medicine

S1 Evening 2018

Dept of Statistics

Contents

General Information

Unit convenor and teaching staff
Lecturer
Anne Karpin
anne.karpin@mq.edu.au
Contact via email or 9850 9617
12 Wally's Walk, Level 6, 647
Monday 5 to 6 pm, Wednesday 12 noon to 1pm

Tutor
Alice Davey
alice.davey@mq.edu.au
Contact via email
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:

At the end of this unit students will be able to explain the meaning of common statistical terms that appear in gambling, sport and medicine.
At the end of this unit students will be able to apply a range of statistical and probability techniques in these and other areas.
At the end of this unit students will be able able to use a spreadsheet and a statistical computer package to carry out statistical investigations.
At the end of this unit students will be able to communicate the results of a statistical investigation clearly.
At the end of this unit students will be able to discuss the role that statistics plays in gambling, sporting performance and medical studies.
At the end of this unit students will be able to demonstrate foundational learning skills including active engagement in their learning process.

General Assessment Information

No extensions will be considered for any assessment task without an application for **special consideration**. 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 for **special consideration** has been received and approved.

Assessment Tasks

Name	Weighting	Hurdle	Due
Practical Participation	10%	Yes	Weekly (Wednesday or Thursday)
Lab Work	10%	No	Weekly (Wednesday or Thursday)
Assignment 1	10%	No	Monday 2nd April 5pm (Week 6)
Assignment 2	20%	No	Monday 28th May 5pm (Week 12)
Final Examination	50%	No	Examination period

Practical Participation

Due: **Weekly (Wednesday or Thursday)**
Weighting: **10%**
This is a hurdle assessment task (see assessment policy for more information on hurdle assessment tasks)

You must attend and participate in at least 10 of the 12 weekly practical classes to pass this unit. This is a hurdle requirement. You must attend the class in which you have been enrolled. Participation will be assessed by the tutor who will check that lab work is completed in class each

week.

On successful completion you will be able to:

- At the end of this unit students will be able to apply a range of statistical and probability techniques in these and other areas.
- At the end of this unit students will be able able to use a spreadsheet and a statistical computer package to carry out statistical investigations.
- At the end of this unit students will be able to communicate the results of a statistical investigation clearly.
- At the end of this unit students will be able to demonstrate foundational learning skills including active engagement in their learning process.

Lab Work

Due: **Weekly (Wednesday or Thursday)**
Weighting: **10%**

Lab work is to be completed during practical classes and must be submitted to the tutor at the end of each practical session for formal marking. To obtain full marks students should prepare, prior to the practical class, by revising the relevant lecture material for the preceding week and attempting the sample lab work on iLearn. Bringing lecture notes from the preceding weeks to class will be helpful. There is no group work assessment in this unit. All work is to be completed individually.

Some of the practical lab exercises require the use of Microsoft Excel, others use Minitab. Students should install Minitab onto personal computers. Minitab can be download from the Student Portal.

On successful completion you will be able to:

- At the end of this unit students will be able to explain the meaning of common statistical terms that appear in gambling, sport and medicine.
- At the end of this unit students will be able to apply a range of statistical and probability techniques in these and other areas.
- At the end of this unit students will be able able to use a spreadsheet and a statistical computer package to carry out statistical investigations.
- At the end of this unit students will be able to communicate the results of a statistical investigation clearly.
- At the end of this unit students will be able to discuss the role that statistics plays in gambling, sporting performance and medical studies.
- At the end of this unit students will be able to demonstrate foundational learning skills

including active engagement in their learning process.

Assignment 1

Due: **Monday 2nd April 5pm (Week 6)**
Weighting: **10%**

Assignment 1 will be available on iLearn two weeks before the due date. Assignments must be submitted online through Turnitin. A link will be available for submission on iLearn one week before the due date. There is no group work assessment in this unit. All work is to be a student's own work. In the case of the late submission of an assignment, if no special consideration has been granted, 10% of the earned mark will be deducted for each day that the assignment is late, up to a maximum of 50%. After 5 days, including weekends and public holidays, a mark of 0% will be awarded for the assignment.

On successful completion you will be able to:

- At the end of this unit students will be able to explain the meaning of common statistical terms that appear in gambling, sport and medicine.
- At the end of this unit students will be able to apply a range of statistical and probability techniques in these and other areas.
- At the end of this unit students will be able to communicate the results of a statistical investigation clearly.
- At the end of this unit students will be able to discuss the role that statistics plays in gambling, sporting performance and medical studies.
- At the end of this unit students will be able to demonstrate foundational learning skills including active engagement in their learning process.

Assignment 2

Due: **Monday 28th May 5pm (Week 12)**
Weighting: **20%**

Assignment 2 will be available on iLearn two weeks before the due date. Assignments must be submitted online through Turnitin. A link will be available for submission on iLearn one week before the due date. There is no group work assessment in this unit. All work is to be a student's own work. In the case of the late submission of an assignment, if no special consideration has been granted, 10% of the earned mark will be deducted for each day that the assignment is late, up to a maximum of 50%. After 5 days, including weekends and public holidays, a mark of 0% will be awarded for the assignment.

On successful completion you will be able to:

- At the end of this unit students will be able to apply a range of statistical and probability techniques in these and other areas.
- At the end of this unit students will be able able to use a spreadsheet and a statistical computer package to carry out statistical investigations.
- At the end of this unit students will be able to communicate the results of a statistical investigation clearly.
- At the end of this unit students will be able to discuss the role that statistics plays in gambling, sporting performance and medical studies.
- At the end of this unit students will be able to demonstrate foundational learning skills including active engagement in their learning process.

Final Examination

Due: **Examination period**
Weighting: **50%**

The Final Examination will be a two hour written examination (plus ten minutes reading time) and will be held during the examination period which runs from 12th June to 29th June, 2018. Students will be permitted to take **one A4 sheet (any colour), handwritten on both sides** (using pens and/or pencils and highlighters) into the final examination. This sheet may contain any information deemed useful to the student and must be submitted with the final exam paper at the conclusion of the exam. A standard calculator may also be taken into the final examination (mobile phones and other devices with calculator apps are not permitted for use in the exam).

The University Examination 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.au/

Students 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, i.e. the final day of the official examination period.

On successful completion you will be able to:

- At the end of this unit students will be able to explain the meaning of common statistical terms that appear in gambling, sport and medicine.
- At the end of this unit students will be able to apply a range of statistical and probability techniques in these and other areas.
- At the end of this unit students will be able to communicate the results of a statistical investigation clearly.
- At the end of this unit students will be able to discuss the role that statistics plays in

gambling, sporting performance and medical studies.
- At the end of this unit students will be able to demonstrate foundational learning skills including active engagement in their learning process.

Delivery and Resources

Classes

Students are required to attend one 3-hour lecture and one 1-hour practical class each week. Lectures will start in Week one and practicals will start in Week 2.

- Lectures: Monday 6pm to 9pm
- Practicals: Wednesday 6pm and 7pm, Thursday 6pm and 7pm. Students must attend the class in which they are enrolled.

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 - STAT175 is an internal unit. New material will be presented in each lecture. Each lecture will also have a tutorial component where students can practice techniques and ask questions. Lecture notes will be provided on iLearn and should be printed off and brought to classes. Practical classes will consist of problem solving and data analysis using Microsoft Excel and Minitab.

Required Text

The eText: **Kj Byun and Peter Petocz (2013).** ***Taking Your Chances in Gambling, Sport and Medicine*** will be available to purchase on iLearn. Lecture and practical notes are based on this eText.

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 4^{th} *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.

Students must use Macquarie University student e-mail accounts for contacting staff. E-mails from hotmail, yahoo and similar accounts may be blocked and will not be answered. Students should check Macquarie University student e-mail accounts regularly.

Unit Schedule

Stat175 Gambling, Sport and Medicine – Session 1, 2018

Date (Monday)	*Wk*	*eText Reference*	*Topic*	*Labs/Assignments Due*
26 Feb	1	Lotto & Lotteries	Introduction Counting techniques	
5 March	2	Keno	Describing gambling games Probability intervals	1. Lotto and combinations (Excel)
12 March	3	Sport and Binomial	Binomial distribution Olympic records	2. Random variables and Keno (Excel)
19 March	4	Sports performance	Normal distribution Z-scores and comparisons	3. World Cup Hockey (Excel)
26 March	5	Health Surveys	Data types & summaries Comparing means	Lab time for assignment 1 preparation
2 April	6	Medical studies	Types of studies Odds ratios	***(Assignment 1 due Mon)*** 4. Pulse rates (Minitab)

9 April	7	Roulette	House margin Chances of being ahead	5. Births and Diabetes (Minitab)
16 April		Mid-semester break		
23 April		Mid-semester break		
30 April	8	Sport and Poisson	Poisson distribution Chi-squared goodness of fit	Assignment 1 solution discussion.
7 May	9	Testing Independence	Cross tabulations Chi-square tests	6. Soccer Goals (Excel)
14 May	10	Sports Betting	Odds and prices Bookmaking	7. Surfing and Health (Minitab)
21 May	11	Medical Testing	Diagnostic testing	Lab time for assignment 2 preparation
28 May	12	Forensic Statistics	Forensic Statistics	***(Assignment 2 due Mon)*** 8. Sports betting (Excel)
4 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 the practical session.

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Grade Appeal Policy
- Complaint Management Procedure for Students and Members of the Public
- Special Consideration Policy *(**Note:** The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.)*

Undergraduate students seeking more policy resources can visit the Student Policy Gateway (https://students.mq.edu.au/support/study/student-policy-gateway). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/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/study/getting-started/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

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

- At the end of this unit students will be able able to use a spreadsheet and a statistical computer package to carry out statistical investigations.
- At the end of this unit students will be able to discuss the role that statistics plays in gambling, sporting performance and medical studies.
- At the end of this unit students will be able to demonstrate foundational learning skills including active engagement in their learning process.

Assessment tasks

- Lab Work
- Assignment 1
- Assignment 2
- Final Examination

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

- At the end of this unit students will be able to explain the meaning of common statistical terms that appear in gambling, sport and medicine.
- At the end of this unit students will be able to apply a range of statistical and probability techniques in these and other areas.
- At the end of this unit students will be able able to use a spreadsheet and a statistical computer package to carry out statistical investigations.
- At the end of this unit students will be able to communicate the results of a statistical investigation clearly.
- At the end of this unit students will be able to discuss the role that statistics plays in gambling, sporting performance and medical studies.
- At the end of this unit students will be able to demonstrate foundational learning skills including active engagement in their learning process.

Assessment tasks

- Practical Participation
- Lab Work
- 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

- At the end of this unit students will be able to explain the meaning of common statistical terms that appear in gambling, sport and medicine.
- At the end of this unit students will be able to apply a range of statistical and probability techniques in these and other areas.

- At the end of this unit students will be able able to use a spreadsheet and a statistical computer package to carry out statistical investigations.
- At the end of this unit students will be able to communicate the results of a statistical investigation clearly.
- At the end of this unit students will be able to discuss the role that statistics plays in gambling, sporting performance and medical studies.
- At the end of this unit students will be able to demonstrate foundational learning skills including active engagement in their learning process.

Assessment tasks

- Practical Participation
- Lab Work
- 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

- At the end of this unit students will be able to apply a range of statistical and probability techniques in these and other areas.
- At the end of this unit students will be able able to use a spreadsheet and a statistical computer package to carry out statistical investigations.
- At the end of this unit students will be able to communicate the results of a statistical investigation clearly.
- At the end of this unit students will be able to discuss the role that statistics plays in gambling, sporting performance and medical studies.
- At the end of this unit students will be able to demonstrate foundational learning skills including active engagement in their learning process.

Assessment tasks

- Practical Participation

- Lab Work
- 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 outcomes

- At the end of this unit students will be able to communicate the results of a statistical investigation clearly.
- At the end of this unit students will be able to discuss the role that statistics plays in gambling, sporting performance and medical studies.
- At the end of this unit students will be able to demonstrate foundational learning skills including active engagement in their learning process.

Assessment tasks

- Practical Participation
- Lab Work
- Assignment 1
- 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:

Assessment task

- Practical Participation

Changes since First Published

Date	Description
19/02/2018	Change to consultation hours