

THE UNIVERSITY OF SYDNEY
Semester 2, 2009

Information Sheet for **MATH1905 Statistics (Advanced)**

Web Site

It is important that you check the Junior Mathematics web site regularly. It may be found through WebCT, or by following links from the University of Sydney front page, or by going directly to

<http://www.maths.usyd.edu.au/u/UG/JM/>

Important announcements relating to Junior Mathematics are posted on the site, and there is a link to the MATH1905 page. Material available from the MATH1905 page may include information sheets, the Junior Mathematics Handbook, notes, exercise sheets and solutions, and previous examination papers.

Lectures

Times	Location	Lecturer	Consultation
11 am Mon and 8 am Tues	New Law LT101	Dr S Müller, Carslaw room 820	Mondays 1-2pm

Lectures run for 13 weeks. The last lecture will therefore be on Tuesday 27 October.

Tutorials

Tutorials (one per week) **start in week 2**. You should attend the tutorial given on your personal timetable. Attendance at tutorials will be recorded. Your attendance will not be recorded unless you attend the tutorial in which you are enrolled.

Tutorial sheets and other hand-outs

The tutorial sheets for a given week will be available on the Friday of the previous week. **You must take the current week's sheet to your tutorial.** The sheet must be printed from the web.

Solutions to tutorial exercises for week n will usually be posted on the web by the afternoon of the Friday of week n .

Textbook

M C Phipps and M P Quine. *A Primer of Statistics*. Prentice Hall, Sydney, NSW, Australia, fourth edition, 2001.

Assessment

Your final raw mark for this unit will be calculated as follows:

- 70%: Exam at end of semester 2.
- 20%: Quiz mark.
- 10%: Assignment mark.

Your final raw mark is then scaled to produce your final mark. Marks are scaled so that the distribution of grades is consistent with the quality of the class, and the difficulty of the unit, as required by the University.

Examination

There is one examination of 1.5 hours' duration during the examination period at the end of semester 2. Further information about the exam will be made available at a later date.

Quizzes

There are two quizzes, each worth 10% of your final raw mark. Quizzes are held during tutorials, in

week 7 (beginning 7 September) and **week 10** (beginning 5 October).

You should put those dates in your diary now! You must sit for the quiz during the tutorial in which you are enrolled. Your quiz mark will not be recorded if you sit for the quiz in a tutorial in which you are not enrolled (unless you have made an arrangement with the Student Office). If you miss a quiz, then you must go to the Student Office as soon as possible afterwards.

Assignments

Two assignments will be set and marked. Each assignment is worth 5% of your final raw mark. Assignments will be due on **Tuesday 25 August** and **Tuesday 20 October**. Please see page 26 of the Junior Mathematics Handbook for details relating to the submission of assignments.

Any questions?

Before you contact us with any enquiry, please check the FAQ page:

<http://www.maths.usyd.edu.au/u/UG/JM/FAQ.html>

Where to go for help

For administrative matters, go to the **Mathematics Student Office, Carslaw room 520**.

For help with statistics, see your lecturer, or your tutor. Your lecturer guarantees to be available during his indicated office hour, and will be available at other times by appointment.

MATH 1905: Week-by-week lecture summary

1. Data Analysis

- **Week 1:** Stem and Leaf Plots, Relative Frequencies and Probability. Histograms. 5-Figure Summaries, Boxplots. R introduction.
- **Week 2:** Σ notation, Sample Mean, Sample Variance. Bivariate Data. Correlation.
- **Week 3:** Linear Regression. Residual plots. Data Analysis using R statistical software.

2. Probability

- **Week 4:** Axioms of probability. Venn diagrams. De Morgan's laws. Inclusion-exclusion principle. Counting principles. Ordered selections. Sampling without replacement. Bayes Rule. Independence.
- **Week 5:** Integer Valued Random Variables. Unordered selections. Binomial, Multinomial, Poisson and Geometric distribution. Mean and Variance. Probability Generating Functions.
- **Week 6:** Continuous Random Variables. Mean and Variance. Standardized RV's, Normal RV's.
- **Week 7:** Independent RV's, Sums of independent Normal RV's. Sampling Distributions, Central Limit Theorem, Normal Approximation to Binomial. **QUIZ 1 in tutorial classes.**

3. Inference

- **Week 8:** Hypothesis Testing, 1-sided test, 2-sided test for a proportion p , sign test.
- **Week 9:** Two sample binomial test, One sample Z -test, One sample t -test.
- **Week 10:** Review of Z -test and t -test. **QUIZ 2 in tutorial classes.**
- **Week 11:** Two sample t -test. Confidence intervals. Confidence bounds.
- **Week 12:** χ^2 Goodness of Fit test.

4. Review

- **Week 13:** Review of Data Analysis, Probability and Inference. Past exam papers.