

SUMMER STATISTICS 2012



Welcome to Summer Statistics

The Summer course is especially designed to suit students with busy work schedules, with evening lectures and flexible options with tutorials and computer labs.

Syllabus

MATH1005 is designed to provide a thorough preparation for further study in mathematics and statistics.

It is a core unit of study providing three of the twelve credit points required by the Faculty of Science as well as a Junior level requirement in the Faculty of Engineering.

MATH1005 offers a comprehensive introduction to data analysis, probability, sampling, and inference including t-tests, confidence intervals and chi-squared goodness of fit tests.

Timetable

	Tuesday	Wednesday	Thursday
3:00-4:00pm	Tutorial 1 Dr Di Warren (Eastern Avenue LT)	Computer Lab 1 Joanna Wang (Carslaw 610-11)	Tutorial 1 Dr Di Warren (Eastern Avenue LT)
4:00-5:00pm	Tutorial 2 Dr Di Warren (Eastern Avenue LT)	Computer Lab 2 Joanna Wang (Carslaw 610-11)	Tutorial 2 Dr Di Warren (Eastern Avenue LT)
5:00-7:00pm	Lecture Dr Di Warren (Eastern Avenue LT)		Lecture Dr Di Warren (Eastern Avenue LT)
7:00-8:00pm	Tutorial 3 Dr Di Warren (Eastern Avenue LT)		Tutorial 3 Dr Di Warren (Eastern Avenue LT)

Lectures

Lectures are interactive, based on the online notes, and the text book (Phipps & Quine, *A Primer of Statistics*).

Tutorials

- Students work at their own pace on questions from the textbook and sample quiz questions (<http://www.maths.usyd.edu.au/u/UG/JM/MATH1005/Quizzes/>).

Computer Lab (optional, see assessment table).

- Learn a simple statistical package over 5 weeks:
 - Wednesday 11 January
 - Wednesday 18 January
 - Wednesday 25 January
 - Wednesday 1 February
 - Wednesday 8 February
- This is very worthwhile, as knowledge of any statistics package makes learning another one much easier, for example in the workplace.
- Participation in each lab is worth 2% assessment (giving a total of 10%).

Assessment

	Option1	Option1
Report	9%	9%
Class Test	9%	9%
Assignment	7%	7%
Computer Lab	10%	-
Exam	65%	75%
	100%	100%

Report

Task Find your own data set, fill out the report template, and prepare a short (1-2minutes maximum) presentation.

Due Thursday 19 January
Hand in the report template and present your report to the class.

Class Test

Task A test consisting of 15 multiple choice questions from Lectures 1-12, to be completed during the tutorial class (50 minutes).

Due Tuesday 31 January

Assignment

Task Questions 2(a) and 3 of the MATH1005 exam paper from 2005, to be completed on the assignment template.

<http://www.library.usyd.edu.au/exams/exam05/Mathematics05.html>

This task can be submitted as a group of up to 4 members.

Due Tuesday 7 February

Exam

Friday 24 February 1:50-3:30pm (1.5 hours, plus 10 minutes reading time)

Questions?

Most questions are answered here: <http://www.maths.usyd.edu.au/u/UG/JM/FAQ.html>

Maths & Statistics First Year Office (Carslaw 520) 9351 5787 firstyear@maths.usyd.edu.au

Sydney Summer School Office (Institute Building H03) 9351 5542 summer.school@usyd.edu.au

Consultations

Semester Consultations By appointment, see Dr Warren.

Pre-exam Consultations Thursday 16 February 1:00-3:00pm and Friday 24 February 10:00am-1:00pm

Course Coordinator

Dr Di Warren: unistats@netspace.net.au (Carslaw 527)

Course Outline

Date	Lecture	Topic	Tutorial	Text book (4 th edition)
Thurs Jan 5	1	Introduction	Background: Algebra Calculator	1-3
	2	Numerical Summaries		13-14, 20-24
Tues Jan 20	3	Graphical Summaries 1	Finding data sets	5-12, 13-19
	4	Graphical Summaries 2		
Thurs Jan 12	5	Bivariate Data 1	Summaries P&Qch1: 7, 11, 13, 15, 17	25-32
	6	Bivariate Data 2		
Tues Jan 17	7	Probability 1	Bivariate data P&Qch1: 19, 21, 23, 25	43-55
	8	Probability 2		
Thurs Jan 19	9	Random Variables	Report	56-61
	10	Discrete Random Variables		
Tues Jan 24	11	Continuous Random Variables 1	Probability P&Qch2: 1, 3, 5, 7, (25)	62-69a
	12	Continuous Random Variables 2		
Tues Jan 31	13	Linear Functions of Random Variables	Class Test	69b-73a
	14	Sums of Random Variables (RVs)		
Thurs Feb 2	15	Sums of Non-Normal Random Variables	Distributions Sums of RVs P&Qch2: 9, 11,15, 17	73b-77
	16	Hypothesis Testing		84-87
Tues Feb 7	17	Proportion Test	Assignment Sums of Non-Normal RVs P&Qch2: 19, 21	88-91a
	18	Sign Test		91b-93
Thurs Feb 9	19	1 Sample Z Test	Proportion test Sign test P&Qch3: 1,3,10	96-97
	20	1 Sample t Test, Paired t Test		98-99, 100
Tues Feb 14	21	2 Sample Z and t Tests	Z test and t test P&Qch3: 5,7,9,11	101-102
	22	Goodness of Fit Test		116-120
Thurs Feb 16	23	Pivots & Confidence Intervals	2005 exam paper	103-105
	24	Revision		

Report

Name SID

QUESTION	ANSWER	MARK
SOURCE Where did you find the data? (eg give url)		1
TYPE What type of data is it?		1
INTERESTING Why is this data interesting to you?		1
USE Who could be benefitted by analysis of this data?		1
ONE NUMERICAL SUMMARY		2
ONE GRAPHICAL SUMMARY		2
PRESENTATION		1
		TOTAL

Assignment

- Questions are taken from the **MATH1005 exam paper from 2005**
- Assignment can be submitted by a group with up to 4 members.

Name	SID	Contribution (0-100%)	Signature

Question	Answer	Mark
2 (a) (i)		2
2 (a) (ii)		2
2 (a) (iii)		3

3 (a)		1
3 (b) (i)		1
3 (b) (ii)		4
3 (b) (iii)		1
		TOTAL