MATH5846 – Course Outline

Information about the course

Course Authority and lecturer:

Dr. Jakub Stoklosa  Email: j.stoklosa@unsw.edu.au
Office: Room RC-2050  Phone: 9385-7029

Consultation:

Consultation will be agreed upon between the students and the lecturer at a mutually convenient time, otherwise, they can be made by appointment.

Credit, Prerequisites, Exclusions:

This course counts for 6 Units of Credit (6UOC).
There are no prerequisites or exclusions for this course.

Lectures:

The lectures run in weeks 8–13 of the UNSW Semester 1, 2014. That is, they start on Tuesday 29th April and finish on Thursday 5th June.

| Lecture 1 (week 8) | Random samples |
| Lecture 2 (week 8) | Introduction to R and R lab session |
| Lecture 3 (week 9) | Estimation and tutorial |
| Lecture 4 (week 9) | Estimation and R lab session |
| Lecture 5 (week 10) | Confidence intervals and tutorial |
| Lecture 6 (week 10) | Hypothesis testing and R lab session |
| Lecture 7 (week 11) | Linear models and tutorial |
| Lecture 8 (week 11) | Mid-session test, no other lectures |
| Lecture 9 (week 12) | General linear models and tutorial |
| Lecture 10 (week 12) | Model assessment and R lab session |
| Lecture 11 (week 13) | Introduction to Bayesian inference and tutorial |
| Lecture 12 (week 13) | Bayes linear models and R lab session |
Tutorials:

There will be regular lab tutorials on Thursdays 6:00-8:00pm in the Maths computing lab in the Red Centre in room RC–M020. Classroom tutorials will be carried out in the form of problem solving sessions throughout the course.

Recommended text/reference book:

5. R manual: [http://www.r-project.org](http://www.r-project.org)

Lecture Notes

Further course information, lecture material, tutorial problems and assignments (when available) can be found on Moodle: [http://moodle.telt.unsw.edu.au](http://moodle.telt.unsw.edu.au)

Objective:

The aim of this course is to provide students with general understanding of statistical theory and application. At the end of the course, students are expected to be familiar with undergraduate level statistical methods, and be proficient in the usage of the statistical programming language R.

Assessments:

Assessment in this course will consist of three assignments (10% each), mid-session test (20%), and a final examination (50%).

Assignments:

- Assignment 1 is due before: Thursday 5pm 15th May (week 10).
- Assignment 2 is due before: Thursday 5pm 29th May (week 12).
- Assignment 3 is due before: Thursday 5pm 5th June (week 13).
Assignments are due in at the start of the classes. Late assignments will not be accepted. Assignments must be YOUR OWN WORK, or severe penalties will be incurred.

**Weighting:** Each of the three assignments has a 10% weighting in your final mark.

**Mid-session test:**

**Duration:** 1 hours duration, held during class at 5:00-6:00pm on Thursday 22nd May (Week 11). The test will be held at the start of the class time.

**Weighting:** 20% of your final mark.

**Final Examination:**

**Duration:** 2 hours duration, date and time TBA.

**Weighting:** 50% of your final mark.

*Every class is different, and to accommodate this, some variation from the above assessment schedule may be prudent. Hence the above schedule should be considered as a guide only, as it may possibly not be strictly adhered to. In the case of assessment dates, no changes will be made without consultation with the class as well as confirmation being posted as an announcement on the course web page.*

**Course Description:**

The aim of this course is to learn about the basic principles of statistical reasoning, the most important methods for estimating unknown parameters of a system and for taking decisions without complete information, and the use of statistical packages. The methods discussed are for visualising data, for simulating random phenomena, for estimating parameters using: Maximum Likelihood, Least Squares estimators, General Linear Models and Bayesian inference, and for testing hypotheses. These statistical procedures will be applied on data using the programming language R.

**Course Evaluation and Development**

The School of Mathematics and Statistics evaluates each course each time it is run. We carefully consider the student responses and their implications for course development. It is common practice to discuss informally with students how the course and their mastery of it are progressing.
Important Administrative information:

The school has strict rules for academic conduct and plagiarism.

School Rules and Regulations

Fuller details of the general rules regarding attendance, release of marks, special consideration etc are available via the School of Mathematics and Statistics Web page at: http://www.maths.unsw.edu.au/currentstudents/assessment-policies.

Plagiarism and academic honesty

Plagiarism is the presentation of the thoughts or work of another as one’s own. Issues you must be aware of regarding plagiarism and the university’s policies on academic honesty and plagiarism can be found at: https://my.unsw.edu.au/student/atoz/Plagiarism.html.