MATH5806 – Course Outline

Information about the course

Course Authority and lecturer:
Dr Renata Rendek, Room RC-1033, Phone 9385 7024

Consultation:
We will decide on suitable time slots in the first lecture. These may then be booked on moodle.

Credit, Prerequisites, Exclusions:
MATH5806 This course counts for 6 Units of Credit (6UOC).
Prerequisite: Math5856 or equivalent.
Exclusion: Math3821.

Lectures:
The lectures run from weeks 1 to 10:

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<th>Tuesday 2:00-4:00pm</th>
<th>Room: Red Centre West M010</th>
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<td>Thursday 2:00-4:00pm</td>
<td>Room: Webster 256</td>
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Syllabus:
The topics covered in this course include (and are subject to change): linear regression; weighted least squares; generalised linear models; fitting GLMs and diagnostics; poisson, binomial regression; analysis of variance; penalised regression methods; splines; penalised splines; thin plate splines; variable selection; generalised cross-validation; local likelihood; kernel smoothing; generalised additive models; multinomial logit analysis; ordinal logistic regression.
The lectures will be complemented with worked examples using R.
Tutorials:

There will be some lab tutorials and problem solving tutorials announced each week.

Recommended reference books:

1. An Introduction to Generalized Linear Models. Dobson, Annette. J.
2. An Introduction to Statistical Learning with Application in R. G. James, D. Witten, T. Hastie and R. Tibshirani.
4. R manuals: http://www.r-project.org/

Lecture Notes

Lectures will be presented in slide form. All additional material will be posted on Moodle.

Objective:

The aim of this course is to introduce students to modern regression models and to provide hands-on experience with computing methods needed for applications to real data.

The activities and assessment for the course will contribute to the core science graduate attributes of ‘Research, inquiry and analytical thinking abilities’, ‘Capability and motivation for intellectual development’ and ‘Communication’.

New ideas, skills and methods are introduced, discussed and demonstrated in lectures. Then students develop these skills by applying them to specific tasks in tutorials and assessments. Active student participation in tutorials is expected.

Assessments:

UNSW assesses students under a standards based assessment policy. For how this policy is applied in the School of Mathematics and Statistics see

http://www.maths.unsw.edu.au/currentstudents/assessment-policies

- There will be two assignments during the term of the session. These will have a mainly computational component such as a data analysis problem. Each assignment will contribute 15% to the final mark for the course.
• There will be a mid-session test in a purely written form, which will account for 20% of the total mark.

• The final exam will have a purely written form and will account for 50% of the total mark.

Important Administrative information:

The school has strict rules for academic conduct and plagiarism. Information on these and matters concerning examination can be obtained via links on the course home page.

Note

The information contained herein is for general guidance of students and is as accurate as possible at the date of issue. You will be informed of any changes.

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.

School Rules and Regulations

Further rules and regulations, particularly on plagiarism and academic honesty, can be found at https://www.maths.unsw.edu.au/currentstudents/assessment-policies.