

620-371: Linear Models

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620-371 Linear Models

Lectures

Monday	10am – 11am	Agar Theatre, Zoology Building
Wednesday	10am – 11am	Agar Theatre, Zoology Building
Friday	10am – 11am	Agar Theatre, Zoology Building

Practice classes

Tuesday	2:15pm – 3:15pm	Russell Love Theatre OR Nanson Laboratory, Richard Berry
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Lab (optional)

Wednesday 1pm – 2pm Nanson Laboratory, Richard Berry Building

Consultation hours

Monday	11am – 12pm	Room 198, Richard Berry
Wednesday	11am – 12pm	Room 198, Richard Berry
Friday	11am – 12pm	Room 198, Richard Berry

You can also drop in any time or contact me via e-mail, to make an appointment or just to ask questions directly.

SSLC Representative

Marc Eames

m.eames2@ugrad.unimelb.edu.au

Assessment

Assignments (3)	15%
Group project	10%
Oral presentation	5%
Written report	5%
Examination	75%

Computing

This course is designed to be mainly theoretical, but we will show how to do some analysis using the statistical package R. Any aspiring statistician should have some familiarity with R, as it is a useful tool for most kinds of statistical analysis.

R is open-source software, and can be downloaded from the University mirror at <http://cran.ms.unimelb.edu.au/>. Andrew Robinson has written an extensive primer called `icebreakR`, which can be found at <http://www.ms.unimelb.edu.au/~andrewpr/r-users/icebreakR.pdf>.

Resources

Lecture notes

There are no lecture notes for this course. I am taking the material more-or-less directly from *A First Course in the Theory of Linear Statistical Models* by Myers and Milton, but unfortunately it is out of print. There is a copy on reserve in the Maths library. I will also put the lecture slides up on the course website, and these should be a good reference.

Other useful (optional) references

A Primer on Linear Models

John F. Monahan

Linear Models: The Theory and
Application of Analysis of Variance

Brenton R. Clarke

Applied Linear Regression (2nd ed)
icebreakR

Sanford Weisberg
Andrew Robinson

More resources

Course website

<http://www.ms.unimelb.edu.au/~s620371/>

Keep a close watch for updates. Lecture slides, assignments and solutions, and other general announcements will all be posted there.

Course outline

- 1 Introduction
- 2 Linear algebra (some revision)
- 3 Random vectors
- 4 Full rank linear model
 - Estimation
 - Hypothesis testing
- 5 Less than full rank linear model
 - Estimation and estimability
 - Hypothesis testing
- 6 Other considerations