Midterm Topics

Friday 22nd February, 12.35-13.25

Midterm Topics

The midterm will examine all topics from Part I of the course on Design and the Analysis of Variance.

A. The Terminology of Design of Experiments

B. The Analysis of Variance

- Completely Randomized Design (one-way layout)
- Randomized Block Design (two-way layout)
- Factorial Design (multi-way layout)

C. Effect size estimation and prediction

A. The Terminology of Design of Experiments

- Experimental vs observational studies;
- factors, levels, treatments;
- balance;
- completeness;
- blocking.

B. The Analysis of Variance

- The logic of the construction of the F-test statistic;
- the ANOVA table and how to construct it for the three main designs.
- the interpretation of the ANOVA F-test result;
- how to use the statistical tables;
- how to interpret the relevant `R` output;
- post-hoc tests and multiple testing;
- the underlying assumptions;
- the meaning of interaction;
- finding the optimal model by removing terms.

C. Effect size estimation and prediction

- Interpreting the effect estimates from `lm` in `R` output;
- Reconstructing the predicted or estimated cell means.

Rubric

You will be allowed:

- one sheet of paper, 215.9 mm x 279.4 mm (8.5 x 11 in), two-sided with notes;
- calculator