# PS923-15 Methods & Analysis in Behavioural Science

## 24/25

**Department**
> Psychology

**Level**
> Taught Postgraduate Level

**Module leader**
> Peter Trimmer

**Credit value**
> 15

**Module duration**
> 10 weeks

**Assessment**
> 100% coursework

**Study location**
> University of Warwick main campus, Coventry

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# Description

### Introductory description

The purpose of the module is to introduce experimental design and statistical programming.

[Module web page](#)

### Module aims

Behavioural scientists need statistical analysis of experimental data and of large data sets. This module covers these topics to allow students to understand how to test hypotheses, plan experimental design and perform statistical analysis using R.

### Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Introduction to research methods, statistics, and R
Modern R: tidyverse et al.
Data visualization with ggplot2

Simple Linear regression
Multiple Linear regression
One categorical Covariate
Interactions of categorical predictors
More theory
Repeated-measures and pooling

## Learning outcomes

By the end of the module, students should be able to:

- 2. Be able to design and report studies in a manner that permits replication attempts.
- 1. Understand hypothesis testing and the relationship between hypotheses and experimental planning and design.
- 3. Be able to program reproducible statistical analyses.

## Indicative reading list

Baguley, T. (2012). Serious stats: a guide to advanced statistics for the behavioral sciences. Houndmills,
Basingstoke, Hampshire; New York: Palgrave Macmillan.
Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2002). Applied Multiple Regression/Correlation Analysis for
the Behavioral Sciences. New York: Routledge Academic.
Fox, J. (2015). Applied regression analysis and generalized linear models. Los Angeles: Sage.
Field, A., Miles, J., & Field, Z. (2012). Discovering statistics using R. London: Sage.
Gelman, A., & Hill, J. (2007). Data analysis using regression and multilevel/hierarchical models. Cambridge;
New York: Cambridge University Press.
Grolemund, G. (2014). Hands-on programming with R. Sebastopol, CA: O'Reilly.
Howell, D. C. (2010). Statistical methods for psychology (7th ed.). Belmont, CA: Wadsworth.
Howell, D. C. (2013). Fundamental Statistics for the Behavioral Sciences, 8th Edition. Belmont,
CA: Wadsworth Cengage Learning. Wickham, H., & Grolemund, G. (2017). R for Data Science: Import, Tidy, Transform, Visualize, and Model Data. Sebastopol CA: O'Reilly.

## Subject specific skills

- R statistical programming language
- Understanding of hypothesis testing
- Understanding of the relationship between hypotheses and experimental planning and design.

## Transferable skills

- Statistical analysis
- demonstrate techniques for displaying data
- evaluate the appropriateness of different approaches

# Study

## Study time

| Type | Required |
| --- | --- |
| Lectures | 20 sessions of 1 hour (13%) |
| Practical classes | 2 sessions of 2 hours (3%) |
| Online learning (scheduled sessions) | 8 sessions of 2 hours (11%) |
| Private study | 110 hours (73%) |
| Total | 150 hours |

### Private study description

110 hours private guided study, including completion of assessments

## Costs

No further costs have been identified for this module.

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## Assessment

You do not need to pass all assessment components to pass the module.

### Assessment group A8

| | Weighting | Study time |
| --- | --- | --- |
| Presentation<br>15-30 mins | 12% | |
| weekly assignments<br>8 weekly brief assessments | 16% | |
| Assignment 1 | 36% | |
| Assignment 2 | 36% | |

### Feedback on assessment

For the class test and written assignments, students will receive individual feedback on their solution plus model answers.
For the group presentations, students will receive written feedback at the end of the term.
For the weekly brief assignments, model answers will be provided.

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# Availability

# Courses

This module is Core for:

- Year 1 of TPSS-C803 Postgraduate Taught Behavioural and Data Science
- TPSS-C8P7 Postgraduate Taught Behavioural and Economic Science (Science Track)
  - Year 1 of C8P7 Behavioural and Economic Science (Science Track)
  - Year 1 of C8P7 Behavioural and Economic Science (Science Track)
- Year 1 of TECS-C8P8 Postgraduate Taught Behavioural and Economics Science (Economics Track)

This module is Core optional for:

- Year 1 of TPSS-C8P9 Postgraduate Taught Psychological Research

This module is Optional for:

- Year 2 of TIMS-L990 Postgraduate Big Data and Digital Futures
- TIMA-L995 Postgraduate Taught Data Visualisation
  - Year 1 of L995 Data Visualisation
  - Year 2 of L995 Data Visualisation
- Year 1 of TIMA-L99D Postgraduate Taught Urban Analytics and Visualisation

This module is Core option list A for:

- Year 1 of TPSS-C8P9 Postgraduate Taught Psychological Research

This module is Option list A for:

- Year 1 of TIMS-L990 Postgraduate Big Data and Digital Futures