

C8203 Introduction to Research Design & Analysis (20 Credits)

Class statement

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Academic level	Year 2

Module format and delivery (hours):

Lecture	Practical	Independent study	Total
21	16	163	200

Educational aim(s):

The aim of this class is to introduce students to the main features of research design and statistical analysis. The course will introduce students to fundamental concepts, issues, and debates in the field of research methods. Students will also be familiarised with the conceptual basis for inferential statistical testing, and will be introduced to a variety of inferential statistics. Finally, a brief introduction to qualitative research methods will also take place.

Students need to cover such material for several different reasons:

1. All these issues are important for students studying psychology as several psychology classes in second and third year require submission of practical reports which have inferential or qualitative research elements
2. Later classes in Sport and Physical Activity, Psychology, and Speech and Language Pathology build on the foundations of this course
3. The final year research project in psychology and SPA requires students to design and conduct their own research project, including data analysis. The final year research investigation modules in SLP also require students to design their own research project, including indicative data analysis. Development of relevant skills is therefore essential
4. Aside from teaching students the course-specific skills mentioned above, knowledge of the issues covered in this course are also essential for students to be able to adequately critique relevant research literature. This influences their ability to evaluate material they read outside of lectures, for essays, and for practical reports. For SLP students, this is especially important for evidence-based practice
5. Beyond the confines of the University, the contents of this class will continue to be relevant for graduates as they are called upon to present and discuss numerical data

Place in course:

This is a core class for Psychology, SLP, and SPA students. These, and other disciplines, have classes that build upon what is taught here, including classes specifically dealing with more advanced statistics, dissertations, and research projects in separate classes.

Content:

This class is 'long-and-thin' meaning it runs over two semesters.

Semester 1

Use of computer-based statistics package (SPSS) for computing descriptive and inferential statistics.
The nature and use of normal distributions and standard scores.

The use of inferential statistics, the rationale for null-hypothesis testing, effect sizes, statistical power, and 95% confidence intervals.

Introduction to Open Science.

Use of G*Power for calculating desired sample size.

Correlation (parametric and non-parametric).

Regression.

Chi-square.

Non-parametric tests of difference (repeated measures and independent groups).

Ethics in psychological research.

Semester 2

Use of computer-based statistics package (SPSS) for computing descriptive and inferential statistics.
t-tests (repeated measures and independent groups).

One-way ANOVA (repeated measures and independent groups).

Follow-up testing (repeated measures and independent groups).

Introduction to qualitative research methods.

Introduction to research design.

Independent learning outcomes:

Knowledge and Understanding

1. Interpret the results of an appropriate statistical analysis (descriptive and/or inferential), and to present them clearly and concisely.
2. Describe null-hypothesis testing.
3. Identify ethical issues and guidelines.
4. Describe issues pertinent to qualitative research methods.
5. Discuss the importance of Open Science.

Practical Skills

6. Develop and evaluate appropriate research designs.
7. Identify an appropriate statistical analysis (descriptive and/or inferential).
8. Perform and report an appropriate statistical analysis (descriptive and/or inferential) with a commonly used statistical package (e.g. SPSS).
9. Use software (e.g. G*Power) to estimate the a-priori sample size for a study.
10. Write research reports.

Generic/Transferable Skills

11. Identify why we use a scientific method to collect and analyse data, and the range of methods available

Teaching, learning and assessment methods:

Methods of teaching and learning:

Lectures; practical sessions; office hours, research participation; and independent study.

Assessment and feedback:

Students will receive generic feedback for the class test along with individual feedback on the practical report. Taking part in research also provides opportunities to get feedback from researchers. Finally, office hours are student-led opportunities for feedback on specific issues of concern.

Assessment	Weighting	Marking criteria	Alignment with ILOs	Feedback	Due
Practical report	40%	Level 2 Psychology Criteria	1, 3, 5-10	Mark and individual comments	Sem 1, Week 11
Class test	54%	Multiple Choice	1-9, 11	Mark and class feedback on answers	Sem 2 formal assessment period
Research participation	6%	Verified participation	3, 11	N/A	Sem 2, Week 11

Other sources of feedback:

Feedback, however, comes in many forms and at various points: when a discussion post is responded to, this is feedback; when a member of staff answers a question during an office hour, this is feedback; a response to a question before, during, or after, a lecture/practical, is feedback! If any feedback is unclear, staff will be happy to provide clarification.

Resit assessment information:

Class test and practical report resits take place during the resit diet in August 2023

Recommended reading:

Core text:

Hanna, D., & Dempster, M. (2012). *Psychology statistics for dummies*. Wiley & Sons.¹

Alternative text

Field, A. (2018). *Discovering statistics using SPSS* (5th ed.). Sage.³

Other useful reading:

Dancey, C. P., & Reidy, J. (2011). *Statistics without maths for psychology* (5th ed.). Prentice Hall.²

Forshaw, M. (2007). *Easy statistics in psychology: A BPS guide*. BPS Blackwell.³

Field, A. P., & Hole, G. (2003). *How to design and report experiments*. SAGE.³ [Digitised copy of Chapter 16 Example of an experimental write-up available through the library]

Wilson, S., & MacLean, R. (2011). *Research methods and data analysis for psychology*. McGraw-Hill Higher Education.³

¹ Electronic and hard copies available through the library

² Electronic copy only available through the library

³ Hard copy only available through the library

Electronic resources:

Check the class MyPlace page for links to useful web-based materials on content, as well as additional support materials (*Useful resources* toggles) and independent study materials (*Independent Study* toggles) which can enhance your ability to learn and understand the topics.