

C8203 Introduction to Research Design and Analysis

20 credits

Class Leader: Dr Simon Hunter (Room GH6.53)

Teaching Staff: Dr Simon Hunter (simon.hunter@strath.ac.uk)
Dr Myrthe Jacobs (please post questions on Myplace)
Dr Sally Wiggins (sally.wiggins@strath.ac.uk)

Teaching Fellow: Dr Lizann Bonnar (lizann.bonnar@strath.ac.uk)

Aims:

The aim of this class is to introduce students to the main features of measurement, research design, and statistical analysis. Following a general introduction, 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 different inferential statistics. Finally, a brief introduction to qualitative research methods will also take place. Students need to cover such material for several different reasons:

- i. 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.
- ii. The third year research methods class in psychology (C8302 Research Methods in Psychology) builds on the foundations of this course.
- iii. The final year research project in psychology requires students to design and conduct their own research project, including data analysis. Speech and Language Pathology students also need these skills, though their dissertation will not involve actual data analysis. Hence, development of relevant skills is essential.
- vi. 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 all psychology classes, for essays, and for practical reports.
- v. Beyond the confines of the psychology department, the contents of this class will continue to be relevant for graduates of psychology (who are often called upon to conduct research and statistical analyses in their roles as research assistants, assistant psychologists, and of course postgraduate research students).

Content:

Semester 1

Introduction: Are research methods and statistics relevant to psychologists and speech and language pathology students? The scientific method.

Writing practical reports in psychology.

The nature of measurement, different types of variables and forms of scales (ratio, interval, ordinal and nominal) used to measure a range of psychological phenomena. Experimental design and sampling.

Improving measurement: reliability and validity.

Summarising sets of psychological measures; including measures of central tendency and dispersion, and graphical representations.

The nature and use of normal distributions and standard scores.

Use of computer-based statistics package (SPSS) for computing descriptive and inferential statistics.

Semester 2

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

Research designs, and their associated costs and benefits.

Inferential statistics appropriate to different research designs, including: t-tests, Chi-square, correlations (product moment and rank order), Mann-Whitney U, the Binomial test, Wilcoxon matched-pairs, the Sign test, and more.

Brief introduction to qualitative research methods: observation, language, meaning.

Ethics in psychological research.

Learning Outcomes:

Cognitive skills

- i. an understanding of why psychologists and SLP professionals use a scientific method to collect and analyse data, and the range of methods available.
- ii. an awareness of historical and conceptual issues.

Knowledge and understanding

- iii. an awareness of the range of variables and measurement scales used in research.
- iv. issues of reliability and validity.
- v. the ability to understand the results of an appropriate statistical analysis (descriptive and/or inferential), and to describe them clearly and concisely.
- vi. an understanding of null-hypothesis testing.
- vii. an awareness of ethical issues and guidelines pertinent to psychologists.
- viii. an understanding of issues pertinent to qualitative research methods.

Practical skills

- ix. the ability to develop and evaluate appropriate research designs.
- x. the ability to identify an appropriate statistical analysis (descriptive and/or inferential).
- xi. the ability to perform and report an appropriate statistical analysis (descriptive and/or inferential) using a commonly used statistical package (SPSS).
- xii. the ability to write psychological reports.

Place in the course:

This is a core class. It constitutes students' first engagement with research methods in psychology, and provides them with the background for entering the more advanced level 3 class **C8302 Research Methods in Psychology**. **C8413 Qualitative Methodologies in Practice**, an option at Level 4, also builds on both these classes. This class also lays the ground for both SLP classes **B6435 Dissertation** and **B6438 Advanced Studies in Communication Disorders**.

Teaching:

Lectures, wikis, practicals, and research participation.

Assessment:

Coursework and online WIKIs will both be completed during the year. There will be one online wiki and one piece of coursework per semester. The first semester coursework (a Class Test) counts for 14% of the final mark, while the second semester coursework counts for 20%. Students who gain an average of 70% or higher on coursework (based on a weighted mean, i.e. [Coursework 1 X 0.41] + [Coursework 2 X 0.59]) will not have to sit the exam, and their class mark will be based on coursework only (again, weighted). For those students taking it, the final two-hour exam counts 66% towards the final mark.

Feedback:

Students will receive generic feedback on Coursework 1 (the Class Test) performance and detailed, written feedback on Coursework 2 (a practical report). Generic class feedback will also be provided upon completion of each Wiki. Voluntary Tutorials provide opportunities for one-to-one feedback on specific issues raised by students.

Feedback, however, comes in many forms and at various points: when a discussion post is responded to on Myplace, this is feedback; when you email a member of staff and they reply, this is feedback; a response to a question before, after, or during a lecture, is feedback! If any feedback is unclear, staff will be happy to clarify it – please do approach us, we're all very friendly.

Employability:

This class provides students with a number of skills which are valued outside of the Undergraduate context. These include: numeracy; the ability to present and interpret numerical information in a clear and concise manner; the ability to understand and translate research findings into plain English; an understanding of research ethics (and more generally,

how to engage with the public in an honest and respectful way); and the ability to work in an online group context.

The subject-specific and generic skills that are developed in this class are noted above (see *Learning Outcomes*). These skills will be of interest to employers within and outwith Psychology, as well as to recruiters for post-graduate courses, so where relevant they should be noted on personal statements/CVs etc. See the Personal Development and Employability page on MyPlace for more information related to personal development and employability.

Reading:

Recommended class text:

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

→ This textbook is also the textbook recommended for the 3rd year C8302 Research Methods class so it is a particularly worthwhile purchase for psychology students.

Supplementary reading:

Dancey, C.P., & Reidy, J. (2007). *Statistics without maths for psychology: 4th Edition*. Harlow: Pearson Education Limited.

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

Howitt, D., & Cramer, D. (2008). *An introduction to statistics in psychology: 4th Edition*. GB: Prentice Hall.

Sani, F., & Todman, J. (2006). *Experimental design and statistics for psychology: A first course*. Oxford: Blackwell Publishing.