

Syllabus: Research Methods 1

The aim of the course is to provide skills and tools for critical evaluation of research results and empirical research designs. A theme of the course is biases, fallacies and paradoxes in interpretation of research results and how these may be resolved by thinking clearly about causal inference, using tools like Directed Acyclical Graphs (DAGs) and data simulations. In addition, two seminars are dedicated to research ethics. A group assignment involves formulating a causal research question and designing an empirical study to answer it. A satellite course entitled “learn R by EXample” (REX) is included, to get started with data simulations in R.

Course code

Master program: PSMT58; Doctoral program: PS302F. It is the same course given at two levels, the only difference is examination criteria and grades.

Prior knowledge

The course assumes prior knowledge corresponding to the content of courses in methodology at Psychology 1-3 at Stockholm University (see literature lists for these courses at www.psychology.su.se).

Learning outcomes

After completing the course, you are expected to have improved your ability to:

1. Understand and contribute to theoretical discussions of causality, causal inference and cause probing research designs;
2. Formulate a causal research question and design an empirical study to answer it;
3. Analyze research proposals and studies from an ethical perspective

Course content

The course will cover the following topics:

- Causal effect estimates: Define, identify, estimate and interpret
- Potential outcome model of causality
- Directed Acyclical Graphs
- Cause probing research designs.
- Confounding and other biases
- Fallacies and paradoxes
- Basic probability (to understand conditioning, independence, and association)
- Data simulation using R
- Research ethics

Hybrid teaching: In real life and online

The course consists of lectures, seminars, and group discussions linked to the individual assignment. Teaching will take place in real life with possibilities for online participation (so called “hybrid” teaching). It is up to you whether you participate in real life or online (using zoom). The lecture rooms are equipped for real time streaming of lectures and for interaction from online participants. Hopefully, this technology will work fine, so everyone may

participate in the discussions. *My guess is that you will benefit much more from the seminars if you attend in real life, so make that your first choice.*

Activities

The lectures deal with behavioral science research methodology, with a focus on causal inference, and with research ethics. Seminars and group discussions focus on specific methodological problems or research articles from a methodological perspective. To be able understand and participate in the seminar discussions, you should have read the literature assigned to each occasion (see schedule on Athena).

Examination

After completing the course, you are expected to be able to:

Learning outcome 1:	Understand and contribute to theoretical discussions of causality, causal inference and cause probing research design
Learning outcome 2:	Formulate a causal research question and design an empirical study to answer it
Examination:	Written exam (individual) and Group assignment
Learning outcome 3:	Analyze research proposals and studies from an ethical perspective
Examination:	Active participation at the Research ethic seminars 1 and 2

Type of examination	Grade	Form
Group assignment	Excellent/Pass /Fail	Oral presentation using slide-show software
Research ethics seminar	Pass/Fail	Seminar discussion
Written examination	0-30 points	Written exam on Athena

The written exam is scored 0 to 30 points. The group assignment is scored pass or fail (= revise), but up to 3 points may be awarded for excellence and be added to the exam score of each group participant. Together, the written examination and the individual assignment may give a *total score* of at most 30 + 3 points.

Grading Master level (PSMT58). The course is graded on the seven-point ECTS-scale (A, B, C, D, E, Fx, F). Grade A requires a *total score* of at least 27 points, B 24-26 points, C 21-23 points, D 18-20 points and E 15-17 points (F: < 15 points). In addition, grades A-E requires passed research ethics seminar, and passed group assignment.

Grading Doctoral level (PS302FO). The course is graded “pass” or “fail”. Grade “pass” requires a *total score* of at least 21 points. In addition, grade “pass” requires passed research ethics seminar, and passed group assignment.

Literature

Articles will be uploaded on Athena:

- 10-20 theoretical articles,
- 10-20 empirical articles,
- Texts on research ethics.

Schedule

Date, time and room: see Athena