Faculty of Social Sciences

# PSPR12, Course 12: Scientific Theory, Research Methods and Statistics, 15 credits

*Kurs 12: Vetenskapsteori, forskningsmetod och statistik, 15 högskolepoäng*

**Second Cycle / Avancerad nivå**

## Details of approval

The syllabus was approved by the board of the Department of Psychology on 2014-11-11 and was last revised on 2022-05-18 by Programme Committee for the Master of Science Programme in Psychology. The revised syllabus applies from 2022-08-29, autumn semester 2022.

## General Information

The course is a compulsory component of semester 8 and 9 of the Master of Science programme in Psychology.

*Language of instruction:* Swedish
Some components may be in English.

## Learning outcomes

On completion of the course, the students shall be able to

Knowledge and understanding
- demonstrate broadened and in-depth knowledge of different theoretical perspectives on science by explaining the theoretical starting points underpinning psychological research and discussing the possibilities and limitations that these entail demonstrate specialised understanding of the difference between correlation and causation
- demonstrate specialised knowledge of different types of quantitative investigation designs
- demonstrate specialised knowledge of different types of validity and threats to validity in research
- demonstrate knowledge of t-tests, analysis of variance and regression analysis regarding their implications and application
- demonstrate a specialised and deeper knowledge of different types of qualitative methodological approaches relevant to psychological research by discussing and comparing their theoretical assumptions, their approaches and areas of application

Competence and skills

- demonstrate the ability to critically discuss scientific theory in relation to both psychological research and the future profession as a psychologist by applying different scientific theoretical and methodological perspectives in relation to practical examples
- demonstrate the ability to reflect critically on science and its development by describing how the formation of scientific theories depends on the context in which the theories are created and by problematizing the role of science in society from an intersectional perspective
- demonstrate the ability to critically discuss similarities and differences between different types of scientific knowledge formation from a theory of science perspective
- demonstrate the ability to critically discuss what is required to establish different types of relationships in psychological research
- demonstrate the ability to discuss different types of validity in scientific research in relation to different types of threats to the conclusions that can be drawn from the results of a study
- demonstrate the ability to provide an informed discussion of how a design can be strengthened by different design elements
- demonstrate the ability to independently analyse statistical data using t-tests, analysis of variance and regression analysis, and report the results of the analyses
- demonstrate the ability to independently plan investigations, formulate research issues and hypotheses for these,choose an appropriate design and methods based on the issue
- demonstrate the ability to apply qualitative methodology by formulating appropriate qualitative research questions, planning relevant data-generating activities and analysing data in accordance with established qualitative methodologies in psychology

Judgement and approach
- demonstrate the ability to reflect on ethical issues in psychological research by critically discussing different ethical models and principles of research ethics, the role of the researcher, the context and the importance of the researcher's own perspective in research projects
- demonstrate the ability to critically evaluate and discuss psychological regarding research questions, methodology, design and results, based on relevant scientific theory and appropriate quality criteria

## Knowledge and understanding

- demonstrate broadened and specialised knowledge of theory of science perspectives
- demonstrate specialised understanding of the difference between correlation and causation
- demonstrate specialised knowledge of different types of investigation designs
- demonstrate specialised knowledge of different types of validity and threats to validity in research
- demonstrate knowledge of variance and regression analysis, and other key methods such as factor, cluster, meta and path analysis with regard to their implications and application
- demonstrate broadened and specialised knowledge of various types of qualitative methodology with regard to the basic epistemological assumptions and possible applications in studies of relevance to psychological research
- demonstrate an understanding of which types of issues and data collection techniques are suited to qualitative approaches
- demonstrate specialised understanding of the basic principles of thematic analysis, and insight into the difference between thematic analyses depending of the method adopted

### Competence and skills

- demonstrate the ability to take a critical position on science as such and use their own critical approach to apply theory of science arguments to both psychological research and the future profession as a psychologist
- demonstrate the ability to critically discuss similarities and differences between different types of scientific knowledge formation from a theory of science perspective and provide informed arguments in favour of the dynamic nature of scientific knowledge
- demonstrate the ability to reflect on how scientific theories are dependent on the social context in which they emerged, and interrogate the role of science in society based on the perspectives of different agents
- demonstrate the ability to reflect on how different types of methodology are related from an epistemological perspective and demonstrate critical insight into the possibilities and limitations of quantitative and qualitative methods for psychological research in this respect
- demonstrate the ability to critically discuss what is required to establish different types of connection in psychological research
- demonstrate the ability to discuss different types of validity in research in relation to different types of threat to the conclusions that can be drawn based on the results of a study
- demonstrate the ability to provide an informed discussion of how a design can be strengthened by different design elements
- demonstrate the ability to independently analyse statistical data by means of variance and regression analysis, and report the results of the analyses
- demonstrate the ability to apply qualitative methodology by formulating issues and analysing data in accordance with hermeneutic-phenomenological or discourse-analytical approaches
- demonstrate the ability to independently plan investigations, formulate research issues and hypotheses for these, choose an appropriate design and methods based on the issue

### Judgement and approach

- demonstrate specialised ability to reflect on ethical issues in psychological research by taking into account principles of research ethics, the role of the researcher, the context, and the importance of the individual perspective in such investigations
- demonstrate the ability to critically evaluate psychological research with regard to method, design and the theory of science
- demonstrate the ability to reflect on the conditions and implications of scientific knowledge formation based on relevant social factors such as gender, class and ethnicity

## Course content

The course is based on the knowledge and skills in the theory of science, research methodology and statistics that have been acquired previously on the programme. Using theoretical studies and practical exercises, the course provides students with knowledge about methods for psychological research, including its relevance for psychological practice. Issues of validity in the research process are of key importance. A further important aim is to provide students with knowledge of the research process and the conditions that govern the researcher's work from planning and problem formulation to final report.

The course is divided into two modules:

Module 12:1. Research Methods, Part 1, 9 credits.

Through continued specialisation in the theory of science, research ethics and methodological issues, the future psychologist is trained to critically review previous research, and prepared for performing their own research. Causation and validity are key concepts addressed. The module examines different types of research design in relation to issues of the possibilities to draw conclusions about causation based on the results, and to generalise from these conclusions, as well as various types of threat to validity of the conclusions that can be related to the type of design. The teaching of statistics enables students to practise their ability to perform statistical analyses, taking into account the issue and the properties of the underlying data. The methods covered include various types of t-test, analysis of variance and regression.

Module 12:2. Research Methods, Part 2, 6 credits.

After an in-depth study of the relevant aspects of theory of science, qualitative methodology in both theory and practice is covered, applicable for psychological research. During the course, the theoretical foundations of several established qualitative research approaches are addressed, including grounded theory, hermeneutic and phenomenological perspectives, and discursive approaches. In relation to the practical application of qualitative research approaches, data-generated methods such as interviews, observations and focus groups are covered and the prospective psychologist is trained to analyse qualitative data with different methodologies. In close contact with the research front as reflected in scientific journals, the student is trained to examine and discuss the scientific quality of research, while considering the methodological assumptions underpinning studies, critically and insightfully.

## Course design

The teaching consists of classes, seminars and exercises. Participation in seminars is compulsory. Students who are unable to participate in one of the compulsory components due to exceptional reasons, such as accidents, sudden illness or similar, will be asked to execute a complementary assignment. This also applies to students who have been absent because of duties as an elected student representative. The content and scope of the complementary assignment is to be decided in consultation with the lecturer in charge of the relevant component. If a student is absent from more than two compulsory components during the course, they will not be allowed to submit additional complementary assignments during the same semester. Instead, completion will then take place by attending the same component the next time the course is offered.

## Assessment

The assessment is based on a written exam in conjunction with the course, and on active participation in compulsory components.

Three opportunities for examination are offered for written tests: a first examination and two re-examinations. Two further re-examinations on the same course content are offered within a year of a major change of the course (e.g. change of the required reading). After this, further re-examination opportunities are offered but in accordance with the current course syllabus.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with

a form of examination equivalent to that of a student without a disability.

*Subcourses that are part of this course can be found in an appendix at the end of this document.*

## Grades

Marking scale: Fail, Pass.
The grades awarded are Pass or Fail. For a grade of Pass, the student must have attained the learning outcomes stated for the course.

At the start of the course students are informed about the learning outcomes stated in the syllabus and about the grading scale and how it is applied in the course.

## Entry requirements

To be admitted to the course, students must be admitted to the Master of Science programme in Psychology and meet the requirements for progression described in the current programme syllabus.

## Subcourses in PSPR12, Course 12: Scientific Theory, Research Methods and Statistics

Applies from H15

1401 Research Methods, Part 1, 9,0 hp
Grading scale: Fail, Pass
1402 Research Methods, Part 2, 6,0 hp
Grading scale: Fail, Pass