

COURSE INFORMATION

Theory of science and research methodology, 4 higher education credits

Vetenskapsteori och forskningsmetodik, 4 högskolepoäng

Introduction

This course aims at providing a foundation in theory of science and research methodology for all doctoral students admitted to third-cycle programmes at School of Engineering, Jönköping University. Traditional scientific traditions relevant to the field industrial product realisation are presented, together with a number of research methods. The course also includes fundamentals in research quality and discussions on possibilities and limitations of science.

The course includes a brief common part concerning theory of science and research methods, and a possibility for each student to deepen their studies into the most relevant method/s for their own research project.

Learning outcome

On completion of the course the student should:

Knowledge and understanding

- demonstrate basic understanding of various scientific traditions relevant to the field industrial product realisation
- demonstrate deeper knowledge of scientific methods in general and of methods in the specific field of research in particular

Skills and abilities

- demonstrate an ability to identify and formulate issues and to plan with appropriate methods a limited research task

Judgement and approach

- demonstrate insight into quality in research
- demonstrate insight into the possibilities and limitations of science

Content

The course includes:

- Basics within theory of science
- Different research designs
- Case study, design science/design research, experiment, action/interactive research, modelling/simulation, etc. based on the needs in the group
- Techniques for data collection (of empirical material)
- Quality in research

Type of instruction

Lecture and seminars. Teaching is conducted in English or Swedish dependent on the requirements.

Prerequisites

Admitted to third-cycle programme or equivalent.

Examination and grades

The course is graded Fail or Pass. Examination includes oral and written parts within two assignments, of which one is individual and one is a group assignment.

Name of the test	Value	Grading
Assignments	4 hec	U/G

Assignment 1: Method chapter in licentiate thesis

Throughout the course, the students shall individually work on a draft methodology section of the licentiate thesis. The draft should in addition to the description of the method chosen also contain clear arguments for the method selected. This assignment is carried out with the support of from the tutors. The result is presented at a concluding seminar.

Assignment 2: Specialisation on selected research method

The students are responsible for a seminar where a selected research method is addressed in depth. The preparation is carried out in small groups, formed based on research interest/research questions. A detailed description of what is to be handled for each method is handed out separately. The result is presented at a seminar.

Course literature (preliminary)

Williamson, K. (2002) *Research methods for students and professionals*, 2nd ed., Centre for Information Studies, Wagga wagga, NSW.

If you had Williamson as a course book during your masters: Karlsson, C. (2016) *Researching Operations Management*, Taylor & Francis, Inc.

Additional literature according to the descriptions related to Theory of science.

Additional material is handed out.

Research Methods Online

As an additional source of information the online course Research Method Online is available for all participants via PingPong. Here you can find additional readings, recorded lectures, and much more.

PingPong

PingPong is used to store material and also provide a complementary online resource (Research Methods Online).

Activity in PingPong: "Theory of science and research methodology (JTH Graduate School)".
Password: TBD

Preliminar schedule fall 2019

Date	Time	Place (JTH)	Topic	Teacher
12/9	10-12	E3105d	Course introduction	Kristina Säfsten
12/9	13-17	E3105d	Lecture 1: Theory of science	Sverker Johansson
13/9	9-12	E3105d	Lecture 2: Science or non-science	Sverker Johansson
26/9	9-12	E3231	Lecture 3: Examination seminar (course book)	Kristina Säfsten
	13-15	E3231	The Box - Exercise	Kristina Säfsten
24/10	9-12	E3105d	Seminar a (assignment 2)	TBD
24/10	13-16	E3105d	Seminar b (assignment 2)	TBD
25/10	9-12	E3105d	Seminar c (assignment 2)	TBD
25/10	13-16	E3105d	Seminar d (assignment 2)	TBD
14/11	8-17	A4222b	Seminar 1 (assignment 1)	Kristina Säfsten
19/11	8-17	A4222b	Seminar 2 (assignment 1)	Kristina Säfsten
13/12	8-17	A4222b	Seminar 3 (assignment 1)	Kristina Säfsten

Teachers

Course responsible and examiner is Professor Kristina Säfsten, kristina.safsten@ju.se, School of Engineering, JU.

Assistant Professor Sverker Johansson, Dalarna University

And some more to be decided by the doctoral students as part of assignment 2.