



# ME2001 Research Methods in Industrial Engineering and Management 7.5 credits

Forskningsmetod inom industriell ekonomi

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

## Establishment

Course syllabus for ME2001 valid from Autumn 2011

## Grading scale

A, B, C, D, E, FX, F

## Education cycle

Second cycle

## Main field of study

Industrial Management

## Specific prerequisites

A total of at least 180 hp of which at least 24 hp are in Industrial Management.

# Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

## Intended learning outcomes

After the course the student should be able:

- To understand social science and industrial engineering frameworks for scientific inquiry
- To analyze and evaluate important research terms, concepts, and techniques
- To understand the various methods for conducting research (qualitative, quantitative, experimental and clinical)
- To articulate informed opinion about the value of empirical and theoretical research
- To have an ability to identify, formulate and solve research problems
- To describe different scientific positions (ontology and epidemiology)
- To show ability to translate achieved methodological knowledge into a research plan

## Course contents

Students of Industrial Engineering and Management are faced with a wide variety of situations where knowledge in research methodology is essential. In academia this is mainly shown in different thesis projects such as the Master Thesis. In working life, knowledge of research methods is important for example when conducting market research, organizational investigations and process improvements and quality surveys. Knowledge in research methods is also important in order to be able to critically review, assess and interpret research findings and apply them to a specific situation or problem. The aims of the course are:

- To present existing and commonly used research methods within the field of Industrial Engineering and Management and
- To provide the students with relevant methodological tools for their Master Thesis project
- The course is on advanced level and will cover qualitative, quantitative and clinical/action/research (used mainly in the social sciences) as well as process improvements, implementation and simulations (used mainly in industrial engineering).

## Disposition

The course comprises of lectures and exercises which covers the following topics:

- Company or academic thesis: working within companies –or writing an academic thesis?
- Critical evaluation of research results
- Structuring the Master Thesis Proposal (TP)
- Theory of science and theory of knowledge
- Qualitative research methods

- Quantitative research methods
- Case study design
- Clinical research
- Experiments, Quasi-experiments and Modeling and Simulation
- Implementation and process improvement in companies (concept generation, creative methods and benchmarking)
- Examples of ongoing research at the ITM school

## Course literature

Collins, J. & Hussey, R. (2009). **Business Research. A Practical Guide for Under- and Post-Graduates**. Third Edition. Palgrave.

Collection of articles

Web sources: (Google Scholar, Scopus, Web of Science)

## Examination

- SEM1 - Seminar, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- SEM2 - Seminar, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Examination, 2.5 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

The course will be examined based on the following:

- 60% Thesis Proposal and Seminar reports
- 30% Written exam
- 10 % Active participation

The grades will be given in A, B, C, D, E, Fx and F.

## Other requirements for final grade

The course comprises the following assignments:

- a Master Thesis Proposal (TP)
- a comparative analysis of two scientific publications and
- an analysis of qualitative data
- an analysis and interpretation of quantitative data

Written feedback will be provided on the assignments and they. The comparative analysis is made individually while the others are made in groups of two students. Additional to those assignments there are also two workshops covering: interview technique, analysis of qualitative data.

## **Ethical approach**

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.