



# HÖGSKOLAN I GÄVLE

## Scientific Methods for Industrial Engineering and Management

6 cr

*Vetenskapliga metoder för industriell ekonomi 6 hp*

Set by Faculty of Engineering and Sustainable Development

**Version**

**Set at**

**Valid from**

10/8/14

**HT2015**

<b>Level</b>	A1N
<b>Education level</b>	Second cycle
<b>Course identifier</b>	IEA012
<b>Credits</b>	6 cr
<b>Main field of study</b>	Industrial Economics
<b>Subject group</b>	Industrial Engineering and Management
<b>Disciplinary domain</b>	Technology 100.0 %

**Learning outcomes**

The course is focuses on immersed knowledge on scientific methods with application in industrial engineering and management. After completion of the course, the student shall be able to

Knowledge and understanding

1. describe different philosophical assumptions within research
2. describe different research approaches within industrial engineering and management
3. describe different scientific methods and their pros and cons

Competence and skills

4. search in databases for scientific literature in a particular area
5. use scientific journal articles for writing a literature review study
6. formulate research questions, choose appropriate scientific methods and plan a research project
7. apply some methods

Judgement and approach

8. critically judge scientific literature
9. assess societal and ethical aspects in research projects.

<b>Course content</b>	<p>Philosophical assumptions within research as positivism and phenomenology</p> <p>Research approaches as case study, action research, grounded theory and ethnography</p> <p>Scientific methods as survey, interview, observation, experiment, simulation, statistical analysis with SPSS</p> <p>The research process as formulation of research questions, research planning, research quality, empirical and theoretical research, qualitative and quantitative research, natural and social science</p> <p>Scientific literature search in databases</p> <p>Scientific writing as structure, scientific accuracy, critical view and references</p> <p>Ethical and societal aspects within research as plagiarism, research ethics and the role of the research field of industrial engineering and management in the society</p>						
<b>Teaching</b>	Lectures, seminars and supervision						
<b>Prerequisites</b>	<p>English language proficiency equivalent to (the Swedish upper secondary school) English course 6/B.</p> <p>Bachelor Degree within the area of industrial engineering and management or equivalent</p>						
<b>Examination</b>	Seminar and seminars assignments. Produce and present an individual literature review study in academic format and do an opposition on another student's literature review study.						
<b>Grade</b>	A, B, C, D, E, Fx, F						
<b>Other regulations</b>	Criteria for final grade will be handed out at the beginning of the course.						
<b>Sustainable environment</b>	A minor part of the course content deals with sustainable development.						
<b>Module</b>	<table border="0" style="width: 100%;"> <tr> <td style="width: 70%;">0010 Seminars</td> <td style="width: 10%; text-align: center;">3 cr</td> <td style="width: 20%; text-align: right;">Grade: AF</td> </tr> <tr> <td>0020 Literature review study</td> <td style="text-align: center;">3 cr</td> <td style="text-align: right;">Grade: AF</td> </tr> </table>	0010 Seminars	3 cr	Grade: AF	0020 Literature review study	3 cr	Grade: AF
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