UNIVERSITY OF BORÅS

Scientific Methodology and Communication for MSc
Vetenskaplig metodik och kommunikation för MSc

7.5 credits
7.5 högskolepoäng

Ladok Code: 52VM10
Version: 2.1
Established by: Committee for Education in Technology 2015-10-26
Valid from: Spring 2016

Education Cycle: Second cycle
Main Field of Study (Progressive Specialisation): Engineering (A1N), Textile Management (A1N)
Disciplinary Domain: Social sciences
Prerequisites: These prerequisites do not apply to students within the programme Science without Borders

Bachelor's degree in Textile Engineering, and English B or equivalent qualifications.
Subject Area: Other Subjects within Social Science
Grading Scale: ECTS-credits

Content

- Criteria for science: philosophy of science, ontology and epistemology.
- The history of science and science methods.
- Research methods: Quantitative methods, Qualitative methods
- Research methods: Quantitative methods in natural science and engineering
- The research process: identifying research problems and knowledge gaps, formulating questions, using or developing theory, finding empirical evidence, testing, analyzing and discussing findings, assessing uncertainty, publishing results and submitting them for peer review
- Key concepts, such as induction, deduction, abduction; falsification
- Scientific ethics
- Critical thinking and scientific argumentation.
- The sociology of science: science in practice, scientific society and subcultures, research rigging, the referee system.
- Information retrieval
- Academic writing and presentation

Learning Outcomes

After completing and passing the course, students should be able to:
Knowledge and understanding
1. describe the development of scientific ideas from both a historical and philosophical perspective.
2. describe and master scientific theoretical concepts and problems.
3. relate frameworks, methods and results to different research areas.
Skills and abilities
4. critically review literature and relate it to quantitative and qualitative methods.
5. problematize the use of hypotheses and utilize it in the thesis project.
6. define sample/cases and apply quantitative and qualitative methods for collecting, expressing and analysing empirical material.
7. comprehend and use appropriate basic statistical concepts in a quantitative research study.
8. write scientific texts and present and discuss scientific work orally and in writing.
9. master academic writing as a tool in scientific work.
Judgement and approach
10. consider ethical aspects of research strategy.

Forms of Teaching

Teaching comprises lectures, presentation assignments and seminars.

The language of instruction is English.

Forms of Examination

The following examinations will form part of this course with respect to the stated learning objectives:

- Written individual assignments 2, 1.5 credits. (Corresponding to objective 5-10)
- Written individual report 1, 3.0 credits (Corresponding to objective 1-4, 7-10)
- Individual examination, 3.0 credits (Corresponding to objective 1-4, 7-10)
  Students must obtain at least an E in all parts of the examination in order to achieve a minimum overall grade of E. The final grade will be the weighted grade of written individual assignments (33%) and individual written examination (67%).

Student rights and obligations at examination are in accordance with guidelines and rules for the University of Borås.

Literature and Other Teaching Materials

Bryman, A. Bell, E. (2015). Business Research Methods. 4 ed. Oxford: Oxford University Press. (778 s)
Hempel, Carl (1966) *Philosophy of Natural Science*, Princeton University, Prentice-Hall, New Jersey, USA
A selection of articles and chapters will be included, max. 400 pages.

Student Influence and Evaluation

The views of students will be canvassed systematically and regularly by means of written course assessments once courses are complete. Student representatives will work together with the Director of Studies and the course manager once a term to review courses held. For further information, please see the College's policy on course assessments and documents prepared by the Institutional Board, Director of Studies and course manager.

Miscellaneous

The course is first and foremost a programme course for the Master's Programme in Textile Engineering.