

Research Planning, 5 credits

Forskningsplanering, 5 högskolepoäng

Course code:	FOES022
Third-cycle subject:	Energy and Environmental Engineering
School:	EST
Valid from:	240319
Established by:	EST
Decision date:	240319
Last modified:	YYMMDD
Level of education:	Third cycle level

Course objective

The "Research Planning" course objective is to provide students with a comprehensive understanding of the key principles and practical skills necessary for effective research planning at the PhD level. Through a combination of theoretical knowledge and hands-on exercises, students will learn to formulate clear and specific research questions, conduct thorough literature reviews, and develop robust research designs and methodologies.

Course content

In this course, students will gain comprehensive knowledge and practical skills in research planning. The course will cover fundamental research principles, including formulating a strong research proposal. Students will also learn about techniques for accessing publicly available data, developing project timelines (milestones, deliverables) and conducting risk assessments and risk mitigation.

Intended learning outcomes

Upon successful completion of the "Research Planning" course, students will be able to:

1. Define Research Planning and Formulate Research Questions:
 - Understand the importance of research planning in the scientific process.
 - Skillfully formulate clear, specific, and answerable research questions.
2. Conduct Comprehensive Literature Reviews:

- Execute extensive literature search.
- Critically analyze and synthesize existing research.
- Identify knowledge gaps in the relevant area.

3. Develop Research Design and Methodology:

- Design a research plan that includes methodology, data collection, and analysis strategies.
- Tailor the research plan to the specific research question.
- Consider risk and budgetary aspects in the research design.

5. Project Management Skills:

- Craft a detailed project timeline and budget.
- Demonstrate effective management and organizational skills required for research projects.
- Apply risk identification, assessment and mitigation methods.

The intended qualitative targets in relation to the Higher Education Ordinance, appendix 2.

Knowledge and understanding

For the Degree of Doctor, the doctoral student shall demonstrate:

- A1: broad knowledge and systematic understanding of the research field as well as advanced and up-to-date specialised knowledge in a limited area of this field, and
- A2: familiarity with research methodology in general and the methods of the specific field of research in particular.

Competence and skills

For the Degree of Doctor, the doctoral student shall demonstrate:

- B1: the capacity for scholarly analysis and synthesis as well as to review and assess new and complex phenomena, issues, and situations autonomously and critically,
- B2: the ability to identify and formulate issues with scholarly precision critically, autonomously, and creatively, and to plan and use appropriate methods to undertake research and other qualified tasks within predetermined time frames and to review and evaluate such work,
- B4: the ability in both national and international contexts to present and discuss research and research findings authoritatively in speech and writing and in dialogue with the academic community and society in general,
- B5: the ability to identify the need for further knowledge.

Judgement and approach

For a Degree of Doctor the doctoral student shall demonstrate

- C1: intellectual autonomy and disciplinary rectitude as well as the ability to make assessments of research ethics, and
- C2: specialised insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used.

Teaching formats

Seminars, workshops

Examination

Examination	SEM1, Seminar, 1hp
Written in the order	INL1, Assignment, 3hp
- examination code	OBN1, Compulsory attendance, 1hp
- form of examination,	
- Scope in credits	

Grade

Examinations included in the course are assessed according to a grade scale of fail or pass.

Grades are to be decided by a teacher specially appointed by the university.

A participant who fails to pass any examination component (SEM1, INL1, OBN1) must retake the respective component in the subsequent offering of the course.

Requirements

To participate in the course and the examinations included in the course, the applicant must be admitted to doctoral studies. Exceptions can be made at the discretion of the course responsible and course examiner for industry professionals holding a relevant MSc degree or equivalent experience in the subject.

Specific entry requirements

The course has a practical orientation and does not require any specialized professional background. The training will be individually adapted to the needs of each participant. The course is recommended for all PhD students.

Selection criteria

Doctoral students admitted to other subjects at Mälardalen University may be admitted to the course, subject to availability. The same applies to doctoral

students admitted to other higher education institutions within and outside of Sweden, as well as industry professionals.

Selection of applicants will be made in accordance with the ranking below:

1. Doctoral students in Energy and Environmental engineering
2. Doctoral students at Mälardalen University
3. Doctoral students at other universities in Sweden
4. Doctoral students at other higher education institutions outside Sweden
5. Industry professionals holding a relevant MSc degree or equivalent experience in the subject

Transitional and other provisions