

Fundamentals for PhD Studies in Science and Engineering, 6.0 credits

Grunderna för studier på forskarnivå inom naturvetenskap och teknik, 6.0 hp

Third-cycle education course

6FTFK01

Dean's office, Faculty of Science and Engineering at Linköping University

Valid from: Second half-year 2023

Approved by
The Board of PhD Studies

Approved

Registration number

Entry requirements

The course is primarily open to all PhD students at the Faculty of Science and Engineering (LiTH) at LiU.

Learning outcomes

The PhD course Fundamentals for PhD Studies in Science and Engineering, 6 ECTS is organized into four modules (M). The course focuses on important topics that all PhD students need to have knowledge on to fulfill PhD examination outcomes according to the Higher Education Ordinance.

After the course the PhD student is able to fulfill the outcomes related to the different modules, i.e. the student is able to:

M1:

- demonstrate basic skills in planning and undertaking research and other qualified tasks within predetermined time frames
- demonstrate basic skills in research communication
- discuss basic insights into philosophy of science
- connect the foundations, methods, and implications of science to (1) Science, Technology, Engineering, Mathematics (STEM) research areas, (2) basic and applied research, (3) connections between research and practice, and (4) the relation between technology and society.
- demonstrate an understanding of the limits and possibilities for research in STEM areas

M2:

- be able to present and discuss economic, social and ecological fundamentals and current global predicaments in sustainable development and technology
- identify and reflect on sustainability aspects related to the PhD students' own research field

M3:

- to present and discuss fundamental perspectives and concepts in gender and equality
- identify and reflect on gender and equality in relation to the PhD student's own research field related to the PhD students' own research field

M4:

- describe and apply theories and methods in ethics and research ethics
- give an overview of important issues in research ethics, like responsibility for research, ethical vetting, and scientific misconduct.
- reflect on ethical issues related to one's own research area in general and PhD project in particular

Contents

The course provides fundamentals for PhD studies in Science and Engineering, including research methodology, basic skills including planning and research communication, sustainability, gender and equality and ethics. Learning activities are focused on creating insight into, basic knowledge about and further planning for on fulfilling PhD learning outcomes for PhD students in STEM areas.

Educational methods

The course is organized into four modules (M).

- M1: Introduction to scientific methodology and basic skills for PhD studies,
- M2: Sustainable research and society,
- M3: Gender and equality,
- M4: Research ethics,

Each of the modules is completed through several learning activities, including lectures, seminars, and assignments. Module 1 includes a final assignment that focuses on creating and communicating a plan for continued learning activities on each of the topics of the course.

Course language: English.

Examination

The course is examined based on active participation of the PhD students in the different modules and the different prescribed activities and assignments in the modules.

M1: The module is examined based on active participation of the PhD students, a written assignment, presentations and discussions.

M2: Active participation and individual assignment

M3: Active participation and individual assignment

M4: Active participation and individual assignment

Attendance is required for a passing grade.

Marking scale: Pass / Fail

Grading

Two-grade scale

Course literature

Course material includes reading of scientific articles as well as popular scientific material and will be specified in the course description.

General information

Teachers

M1: Nicolette Lakemond

M2: Ola Leifler

M3: Jan Eric Stehr

M4: Elin Palm

Course examiner

Nicolette Lakemond

Additional Information

Relevant for the degree outcomes: A2, B1, B2, B4, B6, C1, C2