LINKÖPINGS UNIVERSITET 2019-05-28
Department of Management and Industrial Engineering

Course Plan – PhD course

Name

Theory of science, systems theory and interdisciplinary science

Course objectives

After successful completion of the course, the PhD student shall be able to:

- Understand and reflect upon basic concepts in the theory of science
- Discuss and critically reflect upon processes of knowledge production within science
- Discuss and critically reflect upon how scientific knowledge claims gain validity
- Discuss and critically reflect upon science's role within and relation to society
- Discuss and critically reflect upon the challenges of conducting interdisciplinary research and boundaries between different scientific disciplines
- Discuss and critically reflect upon the merits and limitations of systems theories taught in the course

Content

The course will inform the students about key concepts in the theory of science and their relevance for systems theory and their application to research on socio-technical change. Furthermore, it will provide critical perspectives on systems theories and, finally, provide insight derived from theory of science on challenges associated with interdisciplinary research on socio-technical transition.

Theory of science is taught with a focus on key concepts such as paradigm, knowledge production and boundary work. To complete the course, students must be able to critically reflect on issues such as science's status and role in society, criteria by which scientific knowledge claims gain credence and how what is taken to be 'good science' changes over time. This is examined through written assignment 1, 3 and 4.

Systems theory is taught with a focus on some key concepts and theories, such as large technical systems (LTS), energy systems and earth systems. On course completion, students must be able to discuss issues such as the historical development of systems theory and to analyse its merits and limitations in different research contexts. This is examined through written assignment 2 and 3.

Interdisciplinary research is taught throughout the course as a recurring theme, and the students must discuss challenges associate with interdisciplinary research specifically in their fourth and final written assignment.

Prerequisites

The student must be enrolled as a PhD student.

Target group

The course is general in its scope and thus of potential relevance to any student interested in basic concepts in the theory of science, systems theory and interdisciplinary research challenges. The course is recommended for students who engage in interdisciplinary research in their PhD project.

Organisation

The course has three lunch-to-lunch meetings with six lectures in total. On each occasion, the first day is devoted to lectures, and the second day is devoted to seminar discussions of the written assignment submitted for that event. The fourth written assignment is submitted after the final course event and thus not discussed on a seminar.

All four written assignments are given written feedback by the seminar leaders.

Literature

Will be announced at the start of the course.

Examination

- Written assignments 1-4
- Active participation on seminar 1-3

The course is graded as pass/fail (Godkänd/icke godkänd). For instructions on the written assignments and the seminars, please see the Course Guide on LISAM.

Credits

5 HEC (ECTS)

Other information

Course communication takes place at LISAM, lisam.liu.se. The course is provided by Forskarskola Energisystem (FOES).

The number of course participants is limited to around 15. The doctoral students being part of Forskarskola Energisystem (FOES) are to be given preference.