

## Faculty common course 2021

English course title: Philosophy of Natural Science

Swedish course title: Vetenskapsfilosofi för naturvetare

Extent (credits): 3 hp

Language of instruction: English

Recommended prerequisites: Some experience of PhD studies (1-2 years).

Learning outcomes of the course: In times when science is being beleaguered by fake news and alternative facts, scientists can no longer assume that the merit of their work is taken for granted. Instead, when the foundation of science is in question, we have to start reflecting over what philosophical principles that govern our work, and what separates facts from opinions and sense from sensibility. For a long time, the natural sciences have steered clear from such debate, and the students of the Faculty of Science and Technology have been able to rely on their affiliation as fundamental proof of the credibility of their work. Hence, they are less well prepared for the increasingly relativistic public debate, than, e.g., students from the humanities. In order to amend this, the course will give an introduction to the philosophy of the natural sciences, and, more importantly, give the participants the opportunity to reflect on their own research from a higher perspective and strengthen their confidence in their upcoming role as the champions of science.

Specify which learning outcomes of the doctoral degree that are address/covered (see appendix 1 of the call or the template of ISP). Describe how: The course specifically targets learning outcomes C1 and C2 in the ISP, where it aims to help the students show intellectual autonomy by increasing their scientific self-confidence, give them insight into the possibilities and limitations of science from a philosophical perspective, and, particularly, help them understand science role in society.

Course contents: The course is based on the sometimes conflicting ideas of two major figures in the modern philosophy of science – Thomas Kuhn and Karl Popper. It is given as a series of lectures, seminars and group exercises, but is mainly driven by the active participation of the students. The latter is of the utmost importance for the main objective of the course – to help the students place their own research on a solid philosophical foundation. Examples of general questions that they are expected to confront are: What is science's role in society? What is society's view of science and how does it affect how scientific result should be communicated? What distinguishes good science and good scientists? How is research actually performed at Uppsala University today?

Instruction (course structure): The course consists of two lectures and five seminars. The lecturers and some of the seminars are given in collaboration with the Department of History of Science and Ideas. The lectures focus on 1.) The social, cultural and organizational development of science, and 2.) Uncertainty, models and the relationship between science and policy. The seminars are given by the applicant and focus on 1.) Science and society, 2.) Science in the social debate, 3.) Good research and good researchers, 4.) Science at Uppsala University, and 5.) Role

models in science, presentation of group exercises, feedback from the lecturers and conclusions. However, all aspects of the course are reflected on the ideas of Thomas Kuhn and Karl Popper, which serves as the background theme of the course.

Assessment (form of examination): The examination is formative and include active participation during all parts of the course and an oral presentations of the group exercise. The course ends with a written examination where the students are expected to reflect on their own research based on what they have learned. Additional written examinations are also offered to students that miss one or more of the mandatory parts.

Course examiner (name, e-mail): Anders Persson, anders.persson@angstrom.uu.se

Department with main responsibility: Dept. of Material Science and Engineering

Contact person/s (course responsible teacher) (name, e-mail): Anders Persson, anders.persson@angstrom.uu.se

Course dates/period: September to November 2021

Maximum number of participants: 20

Submit the application for admission to: anders.persson@angstrom.uu.se

Submit the application not later than: 2021-08-15