

## **Faculty common course 2021**

English course title: Science for Sustainable Development

Swedish course title: Forskning för hållbar utveckling

Extent (credits): 5 credits

Language of instruction: English

Recommended prerequisites: The course is primarily for PhD students in the disciplinary domain of Science and Technology (TekNat) who are in the early stage (1st and 2nd year) of their PhD studies and have no or basic knowledge of Sustainable Development.

Learning outcomes of the course: The course objectives are to: (1) Foster and facilitate PhD students' understanding of Sustainable Development – both as an ambiguous concept and continuously evolving agenda that underpin the paradigm shift in contemporary scientific knowledge production; (2) Stimulate PhD students' critical and reflective thinking around the central aspects of Sustainable Development including interdisciplinarity, multidimensionality, time, equity, scale, and volume; (3) Provide to PhD students a conceptual map and analytical toolbox to help them navigate and work with the concept of Sustainable Development in relation to their research projects; (4) Enhance PhD students' ability to associate one or more aspects of Sustainable Development with their research projects. Upon completing the course, PhD students will develop an ability to: (1) Comprehend and refer to the Sustainable Development concept/agenda, including conceptual ambiguities, the agenda's roots, current status, and future trajectories, as well as to recognise the challenge of strong sustainability; (2) Discuss and relate to the central aspects of Sustainable Development including interdisciplinarity, multidimensionality, time, equity, scale, and volume; (3) Contextualize the Sustainable Development concept/agenda in relation to their own PhD research projects; (4) Apply and reflect upon one or more central aspects of Sustainable Development in their research projects;

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: Thinking about and understanding research through the lens of Sustainable Development requires engagement with complexity and recognition that research problems have to be tackled from different perspectives and through different approaches. Sustainable Development is also an agenda that sets goals and targets to be met in the future (for future generations). In this sense, it recognizes the significance of developing knowledge and, especially, identifying new knowledge that can help us address various sustainability challenges now and in the future. Moreover, dealing with Sustainable Development is also about acknowledging that the production of science is not separated from the interests of society, but rather scientific findings should be made available for and applicable to society. Finally, the concept of Sustainable Development is also reflexive, as it problematizes the many limitations of the scientific endeavour, and how they can be overcome. By developing and stimulating PhD students' ability to comprehend and refer to the Sustainable Development

concept/agenda and its central aspects - particularly in relation to their research projects - the course addresses the following learning outcomes of the doctoral degree: (1) The capacity for independent, critical examination and assessment of new and complex phenomena, issue, and situations; (2) The ability to, through their own research, significantly contribute to the development of knowledge; (3) The ability to identify needs for further knowledge; (4) The potential to contribute to social development; (5) The ability to reflect upon the limitations of science.

Course contents: The course consists of the following moments:

(1) Introductory Lecture on Sustainable Development: the emergence, evolution and future trajectories of Sustainable Development as a concept/agenda, with emphasis on strong sustainability; (2) Six Seminar + Lecture (S+L) combos organised around six distinct but interrelated aspects of Sustainable Development, including: (a) Interdisciplinarity: cutting across several disciplines and integrating different types of knowledge; mode 1 (technocratic) vs. mode 2 (participatory) science; (b) Multidimensionality: interlinkages between ecological, economic, social, political and cultural aspects of a given problem, problem-based approach; (c) Time: inter-generational dimension (past-future); short-term vs. long-term; preoccupation with the future (risk society); circular vs. linear conception of time; (d) Equity: historical responsibility vs. needs of future generations; the North-South divide; different stages/speeds of development; (e) Scale: large-scale vs. small-scale; global vs. local; alternative scales (transnational, glocal); global goals – local solutions; (f) Volume: scarcity vs. abundance, limits to growth vs. unlimited growth (technological innovation/optimisation), volume- and resource-making.

Instruction (course structure): The course starts with the Introductory Lecture on Sustainable Development, followed by six Seminars and corresponding Lectures organised around six central aspects of Sustainable Development: interdisciplinarity, multidimensionality, time, equity, scale, and volume. During the seminars aimed at facilitating constructive learning, PhD students are expected to actively participate in the discussions and interactions. They are encouraged to think critically about and reflect upon the discussed aspects of Sustainable Development. The corresponding lectures provide to PhD students concrete examples of research concerned with or linked to each aspect of Sustainable Development. All lectures are held by senior lecturers. The course literature consists of a compilation of essential literature concerned with Sustainable Development and its six central aspects, as well as scientific papers that provide practical examples of how one or more dimensions of SD are included/examined in various research projects. A thorough reading of compulsory literature constitutes a fundamental basis for the seminar discussions. In written assignments, PhD students discuss and reflect upon their research projects by linking them to or contextualising within the concept of Sustainable Development and one or more central aspects of it. The assignments receive both evaluation and feedback that PhD students can use in their research projects.

Assessment (form of examination): The examination consists of: (1) Active participation in seminar discussions, based on an in-depth reading of compulsory literature, reflective/critical thinking and experience sharing; 3 credits; (2) Written assignment (2500-3000 words), in which PhD students discuss and reflect upon their research projects by linking them to or contextualising within the concept of Sustainable Development and one or more central aspects of it; 2 credits.

Course examiner (name, e-mail): Magdalena Kuchler,  
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Department with main responsibility: Department of Earth Sciences

Contact person/s (course responsible teacher) (name, e-mail): Magdalena Kuchler,  
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Course dates/period: October/November 2021

Maximum number of participants: 15

Submit the application for admission to: Magdalena Kuchler,  
magdalena.kuchler@geo.uu.se

Submit the application not later than: 31 August 2021