

Course M.Sc. Renewable Energy Engineering and Management			
Availability to other courses ---			Instruction Language English
Module No. 93320	Module name Research Skills and Ethics for Sustainable Development		Semester/return 2 nd Sem. / annual
Workload/presence 5 ECTS-P (150/60h)	Prerequisite module(s) Scientific Framework for REM	Follow-up module(s)	No. of participants max. 75
Teaching form Lectures, Exercises, Seminar, presentations	Examination form Written exam and term paper (pass or fail)	Start date 08.06.2020	Location t.b.a
Module coordinator: Stefan Pauliuk, PhD (stefan.pauliuk@indecop.uni-freiburg.de)			
Additional teaching staff: Dr. Cathrin Zengerling, Philipp Thapa			
<p>Syllabus</p> <p>This module is the final course of the compulsory part of the REM programme. It deals with the introduction of sciences and scientific methodology. There are no prerequisites required for this course. In the first part of the module, students will be familiarized with the process of research including research strategy and cycle, literature review but also scientific misconducts and fraud. Students will get familiar with scientific citation and bibliography. A knowledge synthesis of a relevant scientific paper of medium complexity will be written and graded.</p> <p>In the second part of the module, students will learn the main goals and methods of qualitative and quantitative research process. This part includes details about research design, data collection and data analysis, as well as preparation for scientific communication and scientific publications, such as writing papers, presenting posters, etc. An own research proposal will be written and graded.</p> <p>The ethics part of the module adds a normative and utopian perspective to the idea of socio-metabolic transitions. The focal double question is: “What future do we want, and why?” Students develop awareness for the diversity both of possible future visions and of the reasons and criteria that can be used to support or criticise their pursuance. They learn to distinguish between factual claims and normative appeals and to analyse their intertwinement in concepts such as development, economic growth, sustainability, biodiversity, or nature. They practise making normative arguments of their own and questioning those of others. Together, we discuss the main conceptions of sustainability and ethics and offer an introduction into environmental ethics, including the question whether we owe respect to (some) non-human beings. Students learn to consider “social technologies”, including ethics and lifestyles, as potential tools for sustainable development in addition to engineering solutions. (Main responsibility: Philipp Thapa)</p>			
<p>Learning goals and qualifications</p> <ul style="list-style-type: none"> • Students will be able to understand the main goals and common methods of qualitative and quantitative research (including empirical methods and statistics) • Students will be able to develop meaningful research questions (hypothesis) and to design studies to evaluate their hypothesis (including research design, data collection and analysis) • Students will be able to communicate their research results among scientific community via scientific texts 			

- Scientific synthesis and writing skills, overview of research skills and application of research skills for development of research proposal (knowledge synthesis and research gap, method choice and description, description of expected results and discussion items)
- Detailed knowledge about environmental ethics
- Awareness of the ethical aspects of sustainable development
- Basic knowledge of the main ethical approaches and normative argumentation skills

Recommended reading

Curd, M. and Cover, J. A (1998): Philosophy of science - the central issue. W. W. Norton & Company, New York

McCaskill, M. K. (1998): Grammar, punctuation and capitalization: A handbook for technical writers and editors (NASA SP-7084). Langley Research Centre, Hampton, Virginia

Popper, Karl (2004): The logic of scientific discovery. London: Routledge-Classical

Strauss, A. and Corbin, J. (1990): Basics of qualitative research: Grounded theory procedures and techniques. Sage Publications

Ott, Konrad: Essential components of Future Ethics. In: Döring, Ralph / Rühs, Michael (eds.): Ökonomische Rationalität und praktische Vernunft. P. 83-108.

Note: All reading is provided as pdf on the University's online learning platform ILIAS.

Course prerequisites

None