UCLouvain

lgeo2140

2026

Global environmental challenges in the Anthropocene

5.00 credits	30.0 h + 30.0 h	Q2

Teacher(s)	Van Oost Kristof ;Vanacker Veerle ;
Language :	English
Place of the course	Louvain-la-Neuve
Prerequisites	This advanced course in earth sciences can be taken by students who are already familiar with geomorphology, physical geography, tectonic geomorphology and earth history, and have succesfully passed the courses LGEO1231, LGEO1331 and LGEO1251 or equivalent courses.
Main themes	Integrated research project in physical geography about a few of the big scientific challenges related to earth sciences, such as • the role of mountainous watersheds in the global sediment flux to the oceans • the human impacts on biogeochemical cycles • the effect of soil erosion on primary productivity • deforestation and soil erosion: an ecological disaster in the tropics? • deforestation and historical erosion: lessons for the future? The students will form different groups that will address one of these predefined topics.
Learning outcomes	**At the end of this learning unit, the student is able to :** 1 The main objective of this course is to develop a basic knowledge of recent developments in environmental sciences that are relevant to physical geography research. Furthermore, this course will also serve as a platform to work with a range of methods and techniques for spatial analysis which are frequently used in Earth Sciences. **Practical/Knowledge skills**: • An awareness of the diversity of approaches and contemporary debates in the field of physical geography • An ability to identify research questions and develop a coherent scientific strategy to analyse research problems in the field of physical geography • An ability to develop a scientific reasoning based on the theoretical background presented in the course • An ability to communicate a geographical analysis using the appropriate scientific language **Personal skills:** • to stimulate an aptitude for scientific debate in relation to the main scientific challenges and technologies used in Earth Sciences • An ability to analyse scientific publications rigorously and critically • An awareness of the contemporary research questions in physical geography and their general, local and regional context
Evaluation methods	At the end of this course, the student should be able: - To illustrate and compare the diversity of approaches and contemporary research questions in the field of physical geography - To analyze scientific publications rigorously and critically - To develop scientific reasoning based on a geographical analysis and the theoretical background acquired during the curriculum - To communicate a scientific study (both written and oral) - To describe and understand the contemporary research questions in physical geography and their general, local, and regional context The evaluation will be based on the scientific communications (2 oral presentations and 1 report, 80% of the total score). The course aims to stimulate critical thinking and participation in the debates will account for 20% of the total score. If generative AI was used for the redaction of the report, this needs to be declared upfront, and the sections where generative AI was used need to be marked as such. The student is responsable for the content of the report, and needs to cite the original bibliographic sources following the bibliographic standards. The evaluation criteria will be based on the competencies mentioned above. The students will receive continuous feedback (both personal and in group) during this course.

Teaching methods	The course is organized into five learning activities: (1) Lectures, (2) Reading assignments, (3) Research exercises, (4) Seminars, and (5) Feedback including practical and methodological support. Each group will present a scientific report of ca. 4000 words following the structure and logic of a scientific article.
Content	The course offers to discover several environmental challenges that influence the transition towards sustainable development. The student will discover a selection of research topics that are currently driving the field of physical geography. After the contextualization of the research topics, the students will form different groups that will address one of these predefined topics. These topics will be used to define and apply the principles of scientific research/ communication/debate and will serve as a showcase to illustrate the diversity of geographical research.
Inline resources	The scientific papers and the materials will be provided by the teaching team, and are available on Moodle. Additional material is available from the BST learning centre.
Bibliography	The scientific articles that are discussed during the course are available through DIAL and moodle.
Other infos	To follow this course, the student should have a basic knowledge of earth surface processes, physical geography and geographical information systems such as taught in LGEO1251, LGEO1331 and LGEO1342. Active in-person participation in the course, including the practical sessions, scientific debates and introductory course, is mandatory. The research projects are supervised once per academic year, and these activities cannot be repeated in the 2nd session.
Faculty or entity in charge	GEOG

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Geography : Climatology	CLIM2M	5		
Master [120] in Biology of Organisms and Ecology	BOE2M	5		
Master [60] in Geography : General	GEOG2M1	5		
Master [120] in Geography : General	GEOG2M	5		
Master [120] of Education, Section 4 : Geography	GEOG2M4	5		