

EN: Glaciers and Glaciation
Discipline: Earth and related environmental sciences
Number of ECTS: 2
The entity coordinating the module: Institute of Geophysics of the Polish Academy of Sciences, Institute of Mathematics of the Polish Academy of Sciences, Institute of Oceanology of the Polish Academy of Sciences, Faculty of Natural Sciences of the University of Silesia, Faculty of Science and Technology of the University of Silesia*
Coordinator: Dr Michał Cieplý, Uniwersytet Śląski w Katowicach <i>(academic degree or title, name, surname, affiliation)</i>
Lecturer: 1. Professor Dr. Emil Gachev, Climate, Atmosphere and Water Research Institute, Bulgarian Academy of Sciences, 16 hours
Description <i>(a brief description of the course — up to 300 words):</i> PL: EN: The course is intended to students without background in glaciology. The main goal is to introduce the students to the very important topic of glaciers as the greatest sources of fresh water on Earth and valuable indicators for climate variations and changes. The course is an overview of the current status of glaciers around the world, in the past, present and future. The first part of the course (12 hours) is dedicated to the present state of glaciers, in the polar regions, middle latitudes and tropical zone. Special attention at the very beginning is paid to the geographical factors for glacier formation. The second part of the course (4 hours) is focused on glacier evolution as result of climate changes in contemporary and historical context. The course is structured in 8 topics, 2 hours for each. The course accentuates on terminology, and is concentrated mainly on mountain glaciation. Special attention is paid to smallest forms of mountain glaciers, which are characteristic for areas marginal to the formation of glaciers (for example, the high mountains of Poland and the Mediterranean).
Scope of topics: PL: EN: 1. Factors for the formation of glaciers. Cryosphere.; 2. Continental glaciers: ice sheets and ice caps in Arctic and Antarctic polar regions. 3. Mountain glaciers – formation and main terms. 4. Glaciers in the extratropical regions; 5. Glaciers in the tropical regions. 6. Small and very small mountain glaciers – terminology and scientific debates. 7. Glaciers and climate change. 8. Glaciers in Europe – past, present and future.
Form of classes: lectures
Teaching methods: PL: EN: Main teaching will be conducted through lectures, which include manual descriptions (on a white board), presentations and multimedia. Teaching will have mainly the form of discussion. Questioning and asking for feedback will be of major importance. Short quiz will be organized in the end of the 4 th and 8 th hours. 15 minute tests will be held in the end of the 12 th and 16 th hours.
Form of verification of learning outcomes: credit
Evaluation criteria and method of determining the final grade: PL: EN: The students will be graded based on results from the two tests (35% of the grade each) and the two quizzes (10% of the mark each). The rest 10% will come from physical presence and overall performance (incl. activity in discussions).
Language of course: English
Mode of the course: in-person
Location of classes <i>(in the case of in-person classes): (please provide the address)</i>

Number of hours: 16
References: <i>(please, provide basic literature on the content taught during the course)</i> 1. Benn, D., Evans, D. 2010. <i>Glaciers and Glaciation</i> . Hodder Education, Durrham. 800 p. 2. Skinner, B., Porter, S. 1995. <i>The Dynamic Earth: An Introduction to Physical Geology</i> . 572 p. 3. Gachev, E. <i>Perennial firn and ice on the Balkans</i> . Springer (in press).