



A Special Course in a Foreign Language (based on the MOOC “Sustainable Development of Mountain Territories in the Context of the Concept of Ecosystem Services”)

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Credits	2 ECTS (optional course), 36 in-class hours
Lecturer	Natalia Iurkova
Level	BSc
Host institution	Gorno-Altai State University, Department of Natural Sciences and Geography
Course duration	1 semester (the classes will be scheduled in accordance with the university timetable)

Summary

Though the course “A Special Course in a Foreign Language” (English) is included in the curricula, there are no special textbooks and other teaching materials for such courses. As a rule, traditional textbooks, such as “English for students in Geography” and “English for students in Ecology” or separate professionally-oriented texts are used. This is an attempt to develop a real educational course in English for BSc students in Natural Sciences (Ecology and Environmental Management, Geography). The course is based on the English version of the MOOC “Sustainable Development of Mountain Territories in the Context of the Concept of Ecosystem Services” launched under the SUNRAISE project in 2020. There has been developed a special textbook that includes texts for reading from the MOOC, additional questions for self-control, and various communicative exercises and tasks.

The information presented in the themes 1-3 is more or less familiar to the students, unlike the themes 4-6, which is absolutely new. There are no courses in the curricula 05.03.06 Ecology and Environmental Management and 05.03.02 Geography that would introduce BSc students to the issues of ecosystem services. A particular focus is put on developing students’ ability to communicate on professional topics in English. The course includes vocabulary and communicative exercises for developing speaking skills, individual and group work assignments, and discussions.

Target student audiences

Last year BSc students majoring in Geography, Ecology and Environmental Management.

Prerequisites:

Required courses (or equivalents):

- English language



Aims and objectives

The aims of the course are to develop students' competence for professional communication in English and to provide them with basic knowledge about the ecosystem services and the role they play in the sustainable development of mountain territories.

The objectives of the course are:

- students will study new professional terms in English and their Russian equivalents;
- students will develop their skills to participate in professional discussions in English;
- students will be introduced to general characteristics of mountain territories;
- students will study the specific features of mountain biodiversity and the factors it is caused by;
- students will gain an understanding of global significance of mountain territories;
- students will be introduced to the concept of ecosystem services and history of its development;
- students will study the types of ecosystem services;
- students will study the types and methods of valuation of ecosystem services;
- students will gain an understanding of key threats to mountain ecosystem services and the way they can be restored.

General learning outcomes:

By the end of the course, successful students will:

- be able to communicate on professional topics covered in this course in English to both specialist and non-specialist audiences, in particular:
 - be aware of SDGs, their targets and indicators;
 - be able to describe the general characteristics of mountain landscapes and climate and the way they are formed;
 - be aware of natural and man-caused disasters that occur in the mountains;
 - understand the reasons for high biodiversity in mountain areas;
 - understand the concept of the "biodiversity hotspots";
 - recognize the global significance of mountain natural and cultural resources;
 - understand the advantages of alternative energy development in mountain areas;
 - be aware of the concept of ecosystem services and history of its development;
 - be able to list the types (categories) of ecosystem services and define their "components";
 - be able to describe the role of mountain territories in the provision of ecosystem services;
 - be able to define the value of ecosystem services;
 - be able to choose the methods for valuation of a particular ecosystem service;
 - have the ability to gather and interpret data for identifying threats to mountain ecosystem services; and
 - be aware of possible methods for restoration of ecosystem services.



Course contents

The course covers the following issues:

Introduction. Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs). United Nations Conference on Sustainable Development in Rio de Janeiro. The Brundtland Report.

Theme 1. General Characteristics of Mountain Territories. General characteristics of mountains. Mountain belts and their description. Types of mountains (fold (folded) mountains, block and fault-block mountains, volcanic mountains) and their formation. Mountain relief, its characteristic features, and natural processes it depends on. Mountain climatic conditions; causes for climatic variability in the mountains. Natural and man-caused disasters that occur in the mountains (avalanches, mudflows, landslides, etc.) International recognition of the importance of mountain systems. Chapter 13 of the Agenda 21.

Theme 2. Biological Diversity of Mountain Territories. The term “biodiversity” and its origin. The phenomenon of the diversity of living organisms. Three independently acting processes causing biodiversity: spontaneously occurring genetic variations (mutations), natural selection, and geographic and reproductive isolation. Earth’s biodiversity and its functions. Reasons for high biodiversity in mountain areas. Major centers of maximum biological diversity. The concept of the “biodiversity hotspots.” World’s biodiversity hotspots.

Theme 3. Global Significance of Mountain Territories. General characteristics of natural and cultural resources of mountain territories. Mineral mountain resources. Mountains as “water towers of the world.” Development of alternative energy in mountain areas (hydro, solar, and wind power). Mountain economic activities (agriculture, forestry, hunting, etc.). Mountain tourism development. Population of mountain territories; indigenous communities and traditional cultures. Role of special laws and organizations in the sustainable development of mountain territories. The Alpine Convention. International organizations fostering sustainable development of mountain territories (the Mountain Forum, the Mountain Partnership, and others).

Theme 4. Ecosystem Services: Essence and History of Development. The concept of ecosystem services and history of its development. Definition of ecosystem services. Fundamental international research on the economics of ecosystem services. The Economics of Ecosystems and Biodiversity (TEEB). Millennium Ecosystem Assessment (MEA). Types (categories) of ecosystem services (provisioning, regulating, cultural, and supporting); their role and “components.” The role of mountain territories in the provision of ecosystem services.

Theme 5. Economic Valuation of Ecosystem Services. Mountains as major sources of ecosystem services. Three types of valuation of ecosystem services (ecological, economic or monetary, and social). Total economic value of ecosystem services and its subcategories: use value (direct use value, indirect use value, and option value) and non-use value (bequest value, altruistic value,



and existence value). Ecosystem services valuation methods: the avoided cost method, the replacement cost method, the factor income method, the travel cost method, the hedonic pricing (valuation) method, the contingent valuation method, and the group valuation method. The willingness to pay approach. Payments for ecosystem services (PES).

Theme 6. Threats to Mountain Ecosystem Services and Their Restoration. Increasing demands for ecosystem services and their degradation. Global change research in mountain areas. Key direct drivers of change in ecosystem services: climate change, environmental pollution, reduction of natural habitats (land use change and physical modification of rivers or water withdrawal from rivers), overexploitation, and invasive alien species.

Overview of sessions and teaching methods

The course will be highly interactive and include communicative methods of teaching a foreign language and elements of lectures, both traditional and video, followed by discussions and various in-class and out-of-class assignments. Special attention will be paid to the development of students' competence for professional communication in English on the issues of sustainable development of mountain territories and ecosystem services. The students will be also taught to look for the required information in the authentic Internet resources, to soundly and logically summarize it and present in front of an audience. All teaching materials of the course are presented in the electronic format on the GASU educational platform <http://moodle.gasu.ru/>. As the course is based on the MOOC "Sustainable Development of Mountain Territories in the Context of the Concept of Ecosystem Services", the e-learning part will also include an obligatory performance of thematic training tests available on <http://sunraise.gasu.ru/?lang=en>, which can be performed an unlimited number of times, but the teacher can see the results and follow the student's progress.

This course is a good example of blended learning, as the students who for some reasons cannot participate in class activities face-to-face can:

- perform all individual tasks and upload them on the course page in Moodle;
- join group discussions online via BigBlueButton (the Moodle tool).

Course workload

The table below summarizes course workload distribution:

Activities	Learning outcomes	Assessment	Estimated workload (hours)
In-class activities			
Practical activities in class while studying the themes of the course (work with new professional terms, listening comprehension)	Memorizing new professional terms in English and their Russian equivalents; understanding theories, concepts, methodology and tools	Class participation	26



activities, work with the texts of lectures, etc.)			
Moderated in-class discussions	Developing skills to participate in professional discussions in English	Class participation and preparedness for discussions	6
Presentation of individual and group assignments	Understanding the targets and indicators of SDGs; knowledge of threats to mountain ecosystem services and possible methods for their restoration; ability to present the information mentioned above in front of an audience	Preparedness for assignments and class participation (asking and answering additional questions)	4
Independent work			
Performing additional exercises, preparation for and performing tests for self-control	Memorizing new professional terms in English and their Russian equivalents; understanding theories, concepts, methodology and tools	Correctness of performed exercises and results of tests	14
Preparation for discussions	Familiarity with and ability to critically and creatively discuss key concepts, tools and methods as presented in the course and additional Internet resources	Class participation, creative and active contribution to discussion	12
Preparation of individual and group assignments	Ability to find the information on the given topics in the authentic Internet resources, to soundly and reasonably summarize it; ability to cover the topic in-depth, to present the material logically and consistently, and to state one's own opinion properly	Completeness and accuracy of the information presented, visibility and informativeness of the presentation	10
Total			72

Grading

The students' performance will be based on the following:

- Thematic tests (18%);
- Level of preparedness for and participation in class discussions (20%);
- Individual assignment (10%);
- Contribution to preparation and presentation of the group assignment (10%);
- Results of the intermediate test (12%);
- Results of the final test (30%).



Course schedule

All the classes will be taught in accordance with the university timetable.

Classes	Topics
1	Introduction
2	Presentation of individual assignments
3	Theme 1 "General Characteristics of Mountain Territories"
4	Theme 1 "General Characteristics of Mountain Territories"
5	Theme 1 "General Characteristics of Mountain Territories"
6	Theme 2 "Biological Diversity of Mountain Territories"
7	Theme 2 "Biological Diversity of Mountain Territories"
8	Theme 3 "Global Significance of Mountain Territories"
9	Theme 3 "Global Significance of Mountain Territories"
10	Theme 3 "Global Significance of Mountain Territories"
11	Theme 4 "Ecosystem Services: Essence and History of Development"
12	Theme 4 "Ecosystem Services: Essence and History of Development"
13	Theme 5 "Economic Valuation of Ecosystem Services"
14	Theme 5 "Economic Valuation of Ecosystem Services"
15	Theme 6 "Threats to Mountain Ecosystem Services and Their Restoration"
16	Theme 6 "Threats to Mountain Ecosystem Services and Their Restoration"
17	Theme 6 "Threats to Mountain Ecosystem Services and Their Restoration"
18	Presentation of group assignments

Course assignments

- Assignment #1 – individual presentation of sustainable development goals
- Assignment #2 – group work on ecosystem services

Assignment #1 Each student should choose one SDG, prepare a PowerPoint presentation, speak on his Goal in class, and be ready to answer additional questions.

Assignment #2 Students are divided into two groups. Each group prepares a PowerPoint presentation on its topic, presents it in the class, and answers additional questions:

Group 1 - Major threats to ecosystem services (in general and in your region)

Group 2 - Ways to protect and restore ecosystem services (in general and in your region)

Literature and Electronic Resources

1. Sustainable Development of Mountain Territories in the Context of the Concept of Ecosystem Services: textbook / N.A. Iurkova, O.V. Zhuravleva, O.V. Klimova, D.M. Kireeva. — Gorno-Altai: Gorno-Altai State University, 2020. — 59 p.

http://elib.gasu.ru/index.php?option=com_book&view=book&id=3539:975&catid=35:inostrannye-yazyki&Itemid=180





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2. Sustainable Development of Mountain Territories in the Context of the Concept of Ecosystem Services: massive open online course <http://sunraise.gasu.ru/?lang=en>



Erasmus+ CBHE project **Sustainable Natural Resource Use in Arctic and High Mountainous Areas**

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