

## Course description

### Tempus project EcoBRU

Course name
Implementation of practice focused ecological education taking into consideration natural and anthropogenous impacts on the territory of rural settlements (based on the example of Novosibirsk Region)

The name of the course section (if applicable)

Expected lecturer qualifications
Teachers of Geography, Biology, Chemistry, Fundamentals of Health Safety, Science, competences in trained subjects

Lecturer	Educational institution
<b>Course Director:</b> professor Lyudmila K. Trubina  <b>Other team members:</b> associate professor Dmitrii S. Dubovik, associate professor Lyudmila Y. Anopchenko	Federal State Budget Educational Institution of Higher Education "Siberian State University of Geosystems and Technologies"

Deficit definition
Needs of taking into consideration natural and anthropogenous impacts on the territory of rural settlements (Novosibirsk Region) when developing ecological educational technologies due to actual problems of ecological safety of Novosibirsk Region.

Required space in the training	Course level	Course type
Obtaining professional competences	basic	distant

Target group	Duration	Languages
Teachers of secondary and high schools	30 hours	Russian

Conditions	
<b>Conditions:</b> Technic support and software for distance education	<b>Other requirements (if applicable)</b>

Ladder Points (1 un.=30 h)	Total hours	Class work	Independent work (h)
1.0	30		30

Topicality for EcoBRU**

General environmental education: dissemination of knowledge about functioning of regional level ecosystems taking into account environmental conditions and specifics of anthropogenous impacts; dissemination of knowledge about ways of keeping stability of natural ecosystems.

### Course objectives

To broaden knowledge of natural and anthropogenous factors influencing the territory of rural settlements as specific environment for ecological education of school pupils, about current legislation and ecological standards in the field of environmental protection of the intended for building territory; to apply methods of training based on GIS technologies for the realization of ecological education.

	Educational objectives of the course (see list of verbs used for educational objectives formulating)	Methods and forms of educational process organization	Monitoring forms and evaluation
<b>Special knowledge</b>	To identify specifics of the territory of the particular rural settlement	Self-study of theoretical material, thematic video lecture, off-line consultations of the teacher	Over-all ranking (testing)
<b>Methodological and didactic competence</b>	To apply various methods and forms of training to understand and solve environmental problems at global, regional and local levels	The course work	Over-all ranking (estimation of obtained results of the course / project work, following control points)
<b>Interdisciplinary competence, social competence</b>	To develop educational ecological programs for school pupils of rural settlements (regional system of education)	Application of geoinformation technologies for modelling of local environmental problems	Over-all ranking (presentation of the scenario of lessons on local ecological problems)

### Objectives of the course section 1 "Natural and resource capacity of the territory and anthropogenous impacts"

Broadening of knowledge about natural and anthropogenous factors of a rural settlement as a specific environment of ecological education and training of pupils.

	Educational objectives of the course (see list of verbs used for educational objectives formulating)	Methods and forms of educational process organization	Monitoring forms and evaluation
<b>Special knowledge</b>	Specifics of the natural and anthropogenous factors influencing the state of the territory of a rural settlement	Self-study of theoretical material, video lectures on chosen topics, off-line consultations of the teacher	Over-all ranking (testing)
<b>Methodological and didactic competence</b>	To apply training methods focused on practice to demonstrate the environmental problems of a rural settlement	The course / project work	Over-all ranking (estimation of obtained results of the course / project work, following control points)
<b>Interdisciplinary competence, social competence</b>	To develop educational ecological programs taking into account specifics of natural conditions and anthropogenous impacts	Application of geoinformation technologies for modelling of local environmental problems	Over-all ranking (presentation of the scenario of lessons on local ecological problems)

	on a rural settlement		
Themes / Content	Class work	Hours and tasks for independent work	
Historical and cultural features of the territory of a rural settlement' formation		Settling features of the territory of Novosibirsk Region (2 hours)	
Role of features of relief, rivers and other water objects on formation of a zone of a rural settlement. Fauna and flora. Zones of recreation.		General characteristic of a rural settlement's territory based on climatic features (2 hours)	
Ecological situation in the place of residence. Sources of environmental pollution for a particular rural settlement: natural processes and economic human activity, recycling		Sources of the environmental pollution and their impact on the rural settlement's territory. (3 hours)	
Techniques of a geocological assessment of the territory of a rural settlement with use of GIS-technologies		Geocological assessment of the particular rural settlement. (8 hours)	

### Objectives of the course section 2 "Approaches used for solution of environmental problems"

To broaden knowledge about the current legislation and ecological standards in the field of environmental protection in relation to the type of a settlement, to apply the knowledge when organizing pupils' research activities aimed at local ecological situation.

	Educational objectives of the course (see list of verbs used for educational objectives formulating)	Methods and forms of educational process organization	Monitoring forms and evaluation
<b>Special knowledge</b>	To be aware of existing standards for quality of environment and standards of a limit impact on the environment.	Self-study of theoretical material.	Over-all ranking (testing)
<b>Methodological and didactic competence</b>	To apply various methods and forms of education aimed at formation of ecological competence of pupils and ecologically safe behaviour.	Control tasks for checking of theoretical material (with the open version of the answer)	Over-all ranking (based on the results of control tasks)

<b>Interdisciplinary competence, social competence</b>	To form comprehensive understanding of impacts on the environment caused by each person's activities	Internet-conference	Over-all ranking (estimation of the given presentation)
<b>Themes / Content</b>			
<b>Themes / Content</b>		<b>Class work</b>	<b>Hours and tasks for independent work</b>
Environmental policy and ecological goals in a person, enterprise, or state's activities			Studying of articles of basic laws in the field of environmental protection with the help of Internet resources (2 hours)
General understanding of technogenic pollution of environment. Types of standards (maximum concentration limit, maximum level limit, and so forth). Pollution units of measure. Background condition of environment			Studying of theoretical material (electronic manuals) (2 hours)
Control and protection of atmospheric air and water resources.			Studying of theoretical material (electronic manuals) (2 hours)
Types of production wastes and consumption. Utilization and recycling of wastes.			Studying of theoretical material (electronic manuals) (2 hours)
Research techniques of a local ecological situation taking into consideration the current legislation and ecological standards in the field of environment protection with use of GIS technologies			Analysis of problem and ecological situations (7 hours)

<b>Forms of control and assessment</b>			
<b>Control form</b>	<b>Percentage ratio</b>	<b>Dates</b>	<b>Criteria of assessment</b>
Over-all ranking	80		
Course work (project)	20		

<b>Terms and conditions of access to monitoring and assessment of knowledge (exam)</b>
Carrying out of control tasks and course work (project)

<b>Document type certifying the successful course visiting (Certificate?)</b>
Certificate

<b>Organizational guidelines</b>
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Place: Siberian State University of Geosystems and Technologies, work place of the teacher

The recommended number of participants: 10-15

Literature and educational materials

Author	Year of publishing	Title	Pages number	Place of publication, publisher or an online link
<b>Basic literature</b>				
Shilov I.A.	2006	Ecology: textbook	512	Moscow: Yuright
Sukhorukova S.A., Dyshluk S.S., Kreymer M.A.	2011	Mapping Environmental Management: manual, recommended by EMA	155	Novosibirsk: SSGA
<b>Additional resources</b>				
Grigoryeva I. Y.	2013	Basics of Environmental Management: manual	336	Moscow: NIZ In-fra-M, 2013. <a href="http://znanium.com/bookread.php?book=341082">http://znanium.com/bookread.php?book=341082</a>

Sincerely yours,

Igor A. Musikhin

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