

Course description

Tempus project EcoBRU

Course name
Implementation of practice focused ecological education taking into consideration natural and anthropogenous impacts on an urban area (based on the example of Novosibirsk).

The name of the course section (if applicable)

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

Lecturer	Educational institution
Course Director: professor Lyudmila K. Trubina Other team members: associate professor Dmitrii S. Dubovik, associate professor Olga N. Nikolaeva	Federal State Budget Educational Institution of Higher Education "Siberian State University of Geosystems and Technologies"

Deficit definition
Problems of ecological safety are current for Novosibirsk that causes taking into consideration natural and anthropogenous impacts on the territory of Novosibirsk when developing ecological educational technologies.

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	
Conditions:	Other requirements (if applicable)

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 ecosystems of a regional level taking into account environment and specifics of anthropogenous impacts, preservation of sustainability of natural ecosystems.
Special vocational scientific education: (Understanding) to expand competences in understanding of the importance of

ecological safety in poultry farming, taking into account natural and technogenic conditions of the industry

The specific link with the professional activity: (Application) to distinguish the priorities for improvement of an ecological situation in the area influenced by the activity of a poultry farm, taking into consideration a set of external components; (Analysis) to define optimum solutions for ensuring ecological safety of the enterprise under specific conditions of production (poultry farm); (Development) to develop an individual policy of the enterprise on keeping standard legal requirements in the field of environmental protection;

Course objectives

Broadening knowledge about natural and anthropogenous factors, taking place in an urban area as a specific environment of ecological education and training of pupils, about current legislation and ecological standards in the field of environmental protection of an urban area. Application of the training methods based on geoinformation technologies to implement 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
Special knowledge	To identify specifics of a city ecosystem	Self-study of theoretical material, video lectures on chosen topics, off-line consultations of the teacher	Over-all ranking (testing)
Methodological and didactic competence	To apply various methods and forms of education to a better presentation of environmental problems at global, regional and local levels	The course work	Over-all ranking (estimation of obtained results of course work, following control points)
Interdisciplinary competence, social competence	To develop educational ecological programs for pupils of Novosibirsk schools (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"

To broaden knowledge about natural and anthropogenous conditions of an urban area as 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
Special knowledge	To represent specifics of natural and anthropogenous factors influencing an urban environment	Self-study of theoretical material, video lectures on chosen topics, off-line consultations of the teacher	Over-all ranking (testing)
Methodological and didactic competence	To apply the practice focused training methods to disclosure of environmental problems of the city	The course work	Over-all ranking (estimation of obtained results of course work, following control points)

Interdisciplinary competence, social competence	To develop educational ecological programs taking into account specifics of natural and technogenic conditions of an urban area	Application of geoinformation technologies for modelling of local environmental problems	Over-all ranking (presentation of the scenario of lessons on local ecological problems)
Themes / Content		Class work	Hours and tasks for independent work
General characteristic of climatic features of an urban area.			General characteristic of the territory of Novosibirsk on climatic features (2 hours)
Formation of infrastructure of an urban environment and its impacts on life conditions of a person.			Functional zoning of the territory of the city. (2 hours)
Technogenic pollution of an urban area.			Consideration of types of the pollution formed in each functional zone. (4 hours)
The current legislation and ecological standards in the field of protection of the environment in relation to settlement type.			Studying of acts and basic laws in the field of protection of the environment by means of an Internet resource (2 hours)
Techniques of the analysis of an ecological situation at the local level and relations of the person to the environment, including the use of GIS-technologies			Review of advanced methods of research of an ecological situation. Preparation of the scenario of lessons according to the analysis of local environmental problems. (6 hours)

Objectives of the course section 2 "Approaches to the solution of environmental problems"

To broaden knowledge of the current legislation and ecological standards in the field of nature protection in relation to settlement type, usage of the new knowledge at the organization of activity of pupils for research of a 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
Special knowledge	To be aware about existing standards of quality of environment and standards of admissible impact on it	Self-study of theoretical material	Over-all ranking (testing)

Methodological and didactic competence	To apply various methods and forms of education for formation of ecological competence of pupils and ecologically safe behaviour in an urban environment	Control tasks (with open version of the answer)	Over-all ranking (control tasks)
Interdisciplinary competence, social competence	To form comprehensive understanding of influence of activity of a person on the environment	Internet conference	Over-all ranking (Power Point presentation)

Themes / Content	Class work	Hours and tasks for independent work
Environmental policy and ecological aims in activity of personality, enterprise, state		Studying of articles of basic laws in the field of environment protection by means 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)
The analysis of impact of activity of the particular enterprise on an urban area taking into account the current legislation and ecological standards in the field of environment protection with use of GIS technologies		Analysis of problem ecological situations (individual task) (7 hours)

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

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

Document type certifying the successful course visiting (Certificate?)
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Certificate

Organizational guidelines

Place: Siberian State University of Geosystems and Technologies, work place of the teacher

The recommended number of participants: 15-20

Literature and educational materials

Author	Year of publishing	Title	Pages number	Place of publication, publisher or an online link
Basic literature				
Shilov I.A.	2006	Ecology: textbook	512	Moscow: Yuright
Additional resources				
Grigoryeva I. Y.	2013	Basics of Environmental Management: manual	336	Moscow: NIZ In-fra-M, 2013. http://znanium.com/bookread.php?book=341082

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Igor A. Musikhin

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