Course description

Tempus project EcoBRU

Course name
"Environmental component in the professional education"

Expected lecturer qualifications
Experience of teaching interdisciplinary courses as a part of professional modules, at least one year. Possession of pedagogical and information technologies. Computer skills (user level) Possession of pedagogical and information technologies.

Lecturer	Educational institution
Course Director: Ludmila Starkova, Rector, NIRO **Other team members:** Natalia Lebedeva, candidate of biological Sciences, NIRO Irina Melnikova, International director, NIRO	Novgorod Institute of Educational Development (NIRO)

Deficit definition

Federal state educational standards according to vocational training programs of various integrated groups don't provide the certain information part concerning environmental issues.

However, subsequently, implementation of practical activities to all specialties anyway brings the expert to the need of consideration of ecological aspects of the professional activity.

Taking into consideration all these facts, it is necessary to provide students with the knowledge which allows to create the correct understanding of interrelation of the future specialty with the surrounding space. The most rational way to provide this information is not in the form of separate discipline, but integrated into the professional module (to the discretion of administration of the educational organization).

Required space in the training	Course level	Course type
The course can be used as an additional educational program of professional development for college teachers.	For development of a course listeners need to possess the general competences and basic knowledge in the field of ecology	Professional development. Course format – resident training

Target group	Duration	Languages
College teachers	72 hours	Russian

Conditions	
Conditions: Computer class, access to the Internet, possibility of the video conference organization.	**Other requirements (if applicable)** Access to literature and educational materials, electronic libraries.

Ladder Points (1 un.=30 h)	Total hours	Class work	Independent work (h)
2,4	72	36	36

Topicality for EcoBRU**
Mastering the teachers' competences of a professional cycle in the field of ecological knowledge for more effective realization of didactic units concerning questions of an ecological component in professional education of specialists of various integrated groups. The program of a course provides the information and legal section, the information and theoretical section, the methodical section, the control and reflexive section.

Course objectives			
Providing teachers of a professional cycle with necessary information, legal and methodical knowledge in the field of ecology for integration into educational space at implementation to the federal state educational standards (FSES) according to the programs of vocational training.			
	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	Remember the main information of ecological factors of the environment, the main environments of life (atmosphere, lithosphere, hydrosphere) and their components. Remember ecosystems and the biosphere. Represent relationship of organisms in ecosystems, consequences of activity of the person on the biosphere. Learn legal and social aspects of ecology, modern strategy and approaches to conservation. Learn new pedagogical technologies. Reproduce organizational methods of environment protection for the solution of a specific ecological objective in the field of conservation; Represent protection of the nature as a direct component of professional	Interactive training by means of the computer: Work with lecture materials. Reading the presented scientific and publicist articles. Working off the new pedagogical technologies for the subsequent practical application in pedagogical activity. Implementation of the project by listeners of a course to the subject "Ecological Component in Professional Education in the Specialty _____" (with the indication of specialty within which the realization of the pedagogical activity is carried out).	The design of the project (content, presentation, possibility of its use in the training purposes in the educational process as a secondary professional education).

	activity.		
Methodological and didactic competence	Interpret practical experience of nature protection from a resource-saving position; Explain physical and chemical essence of the methods of the nature protection; Explain the value of ecological safety of the nature; Apply legal and methodical knowledge in the practical activities; Illustrate lecture material with the practical examples; Make evident the need of the nature protection against anthropogenous influence; Realize professional approach in the analysis of problems and justification of decisions; Classify the facts and the phenomena connected with the change of the biosphere condition; Draw a conclusion about the reasons of change of ecological balance; Project a current state of anthropogenous impact on the biosphere; Lead a discussion about environmental problems, of the rational environmental management, efficiency of technological decisions; Describe the international experience in the sphere of protection of the nature; Model consequences of the nature pollution on the basis of the practice analysis; Make projects (subject "Ecological Component in Professional Education)	Making a project "Ecological Component in Professional Education in the Specialty _____" (with the indication of specialty within which realization of the pedagogical activity is carried out) for implementation to the educational process.	The design of the project (content, presentation, possibility of its use in the training purposes in the educational process as a secondary professional education).
Interdisciplinary competence, social competence	Show possibilities of fundamental sciences for the solution of the applied	Conference	Project discussion

	problems of conservation; Use knowledge, skills from different disciplines for the organization of conservation from anthropogenous influence in future professional activity; Use a conceptual framework and lexicon of interdisciplinary sciences and branches, – understanding of communication between various disciplines and psychological readiness to apply knowledge of the corresponding disciplines when studying others; Show the conscious positive attitude to the ecological orientation of technical activity within the concrete specialty.		

Themes / Content	Class work	Hours and tasks for independent work
Information and legal section **Topic 1.** Legal and social aspects of ecology. Environmental law. State control over the environment. The main directions of modern state environmental policy. Providing environmental laws.	**4**	**4**
Topic2. Ecological monitoring. The organization of the state system of monitoring. International environmental cooperation	**2**	**2**
Information and theoretic section **Topic 1.** Subject, objectives and problems of modern ecology. Subject, objectives and problems of ecology. The relevance of economic problems in the modern world. The structure of ecology and science contents	**2**	**2**
Topic 2.The body and the environment. Environmental factors of the environment. The definition of habitat. Conditions of life. Environmental factors environment: abiotic, biotic and anthropogenic. The effect of environmental factors on organisms. The limiting factor.	**2**	**2**
Topic 3. Main environments of life. The ground-air environment (atmosphere). Feature, the most important factors of the ground-air environment. Light and temperature adaptation. Pollution of ground-air environment.	**2**	**2**

Aquatic habitats (hydrosphere). Characteristic properties of water as a habitat limiting factors; the organisms living in the water, etc.). The distribution of water in the hydrosphere. Water as a component of the internal environment of organisms. Water resources, the rate of human use and the possibility of replenishment. Pollution of water and ways of it protection.	**2**	**2**
Soil environment (lithosphere). The soil is a rich habitat for living organisms. The structure and components of soil. Anthropogenic pollution of soils. The value of the soil in the cycle of nutrients and disinfection of waste	**2**	**2**
Theme 4. Ecosystems. Relationships of organisms in ecosystems. The ecological balance. The principle of ecosystem sustainability - the ecological balance, the consequences of its violation.	**2**	**2**
Topic 5. Biosphere. The cycle of elements in the biosphere. Biosphere – the global ecosystem. The composition, the boundaries of the biosphere; its functions. The energy flow and the cycling of important nutrients in the biosphere (carbon cycle, nitrogen, sulfur, phosphorus and water).	**2**	**2**
Topic 6. The human impact on the biosphere. Changes in the biosphere. The consequences of human activities in the environment. The impact of production activities in the field of their future profession on the environment. Global environmental problems and their solutions.	**2**	**2**
Topic 7. The nature conservancy. The nature conservancy - conservation element of the ecological balance on the planet. Environmental management. Scientific foundations and principles of environmental management Ecology as a theoretical basis for rational use and conservation. The rules of rational nature management.	**2**	**2**
Methodological section **Topic 1.** Credit-modular creation of the educational process.	**2**	**2**
Topic 2. The point-rating assessment of students ' knowledge.	**2**	**2**
Topic 3. The use of distance learning in the educational process.	**2**	**2**
Control and reflexive section Presentation of the completed project by the students of the course on "Ecological Component in Professional Education in the Specialty _____" (with the indication of specialty within which realization of the pedagogical activity is carried out) for implementation to the educational process.	**6**	**6**
Total	**36**	**36**

Forms of control and assessment			
Control form	**Percentage ratio**	**Dates**	**Criteria of assessment**
The implementation of	100%	At end of the	The design of the project (content, presentation, possibility of

the project by listeners of the course "Environmental Component in Professional Education in the Specialty _____ __" (with the indication of specialty within which realization pedagogical activity is carried out).		training	its use in the training purposes in the educational process as a secondary professional education).

Terms and conditions of access to monitoring and assessment of knowledge (exam)
Attendance, the implementation of the project.

Document type certifying the successful course visiting (Certificate?)
Certificate of the professional development of the established sample

Organizational guidelines
Place: Computer class, personal computers for students. **The recommended number of participants:** 15-20

Literature and educational materials				
Author	**Year of publi-shing**	**Title**	**Pages number**	**Place of publication, publisher or an online link**
Basic literature				
Broslavsky L.I.	2014	Responsibility for environment and compensation of an ecological harm: laws and realities of Russia, the USA and European Union: Monograph.	229	Infra of M
Petrov K.M.	2014	Ecology of the person and culture: course book	384	Himizdat
Marinchenko A.V.	2015	Ecology: The course book for bachelors	304	Dashkov and Ko
Tetelmin V. V., Yazev VA.	2013	Ecology	393	INTUIT
Kichigin N. V.	2014	Ecological law. Short course of lectures.	222	Urait
Bogolyubov S. A.	2014	Ecological law. The course book for bachelors	482	Urait

Anisimov A.P.	2014 г.	Ecological law of Russia. The course book for an applied bachelor degree.	495	Urait
Girusov E.V.	2014	Ecology and economy of environmental management. Course book.	519	Uniti-dana
Chernova of N. M. Bylov A.M.	2008	General ecology. Course book.	408	Drofa
TotaiA.V.	2014	Ecology. Short course of lectures.	407	Urait
Additional resources				
Romanyuk E.V., Gubin A.S., Korchagin V. I., Merchalova M. E.	2012	Ecology: theory and practice: course book	132	VGUIT
Prokhorov B. B.	2010	Social ecology. Course book	265	Academy
Akimova T.A., Haskin V. V.	2012	Ecology. The person – Economy – Environment. Course book	495	Uniti-Dana
Larionov N. M.	2014	Industrial ecology. The course book for bachelors	493	Urait
Stepanovskikh A.S.	2012	General ecology: Course book	687	Uniti-Dana
Tyagunov G. V.	2014	Ecology.Course book	304	KnoRus
Andreyeva N. D., Solomin V. P., Vasilyeva T.V.	2009	Theory and methodology of ecology training	203	Moscow,Academy