

Federal State Autonomous Educational Institution of Higher Education

"Peoples' Friendship University of Russia"

Faculty of Ecology

Recommended by the Methodological council
on specialties and study directions

WORKING PROGRAM OF THE DISCIPLINE

Name of the discipline

ECOLOGIC-ECONOMICAL ASPECTS OF ENVIRONMENTAL PROJECTS

Recommended for the specialty/ direction

05.04.06 Ecology and nature management

Masters' program:

Economics of natural resources management

1. Goals and objectives of the discipline:

To lay students' knowledge of the environmental substantiation of economic and other activities in the pre-investment and project documentation at different stages of design; to teach how to use methods and principles for assessing the impact on the natural environment and conducting state ecological expertise and assessing the management of environmental safety of projects.

2. Place of discipline in the structure of the educational program:

The discipline Environmental Management Standards refers to an optional part of block 2 of the curriculum.

Table No. 1 shows the previous and subsequent disciplines aimed at the formation of the discipline's competencies in accordance with the competence matrix of EP HE.

Table 1

Previous and subsequent disciplines aimed at building competencies

№ п/п	Code and name of competence	Preceding disciplines	Subsequent disciplines (groups of disciplines)
General professional competencies			
1	GPC-4 Ability to apply normative legal acts in the field of ecology and nature management, norms of professional ethics		
2	GPC -6 Ability to carry out critical analysis, apply a systematic approach to the digital economy		
Professional competencies (type of professional activity - research, control and expert, organizational and management)			
3	PC-1 the ability to formulate problems, tasks and methods of scientific research, generalize the results obtained, formulate conclusions and practical recommendations based on research results		
4	PC-3 knowledge of the basics of design, expert and analytical activities and the implementation of research using modern approaches and methods, equipment and computing systems	Natural and natural-man-made environmental risks Industrial Safety	

3. Requirements for the results of mastering the discipline:

The process of studying the discipline is aimed at the formation of the following competencies:

- the ability to carry out the organization and management of research and development and expert and analytical work using advanced knowledge in the field of environmental management; develop measures in the organization for economic regulation and personnel management in the field of environmental protection; planning, development, implementation and maintenance of functioning monitoring of the functioning and improvement of the OSMS; to apply in practice regulations in the field of environmental

protection; work with federal information resources and information systems in the field of environmental protection, with statistical and reporting data (PC9).
(indicated in accordance with OS VO RUDN / FGOS VO)

As a result of studying the discipline, the student must:

Know: the legal basis for standardization, the structure and purpose of environmental management standards.

Be able to: develop basic documents for environmental support of the project stages.

Possess: modern approaches and methodology of EIA.

4. The scope of the discipline and types of educational work

The total labor intensity of the discipline	2 credits								
Type of educational work	Total hours	Semesters							
		1	2	3	4	5	6	7	8
Classroom Lessons (total)									
Including:									
<i>Lectures</i>	9					9			
<i>Practical lessons</i>	17					9	8		
<i>Seminars</i>	-								
<i>Laboratory work</i>	-								
<i>Independent work</i>	186								
Control	4					2	2		
The total labor intensity, hours.	216								
The total labor intensity, credits	6								

5. Discipline content

5.1 Contents of discipline sections

Discipline section name	Section content (topics)
Introduction	Projects. Environmental design concept. Stages of development and implementation of the project / Feasibility study of projects. The composition of the feasibility study. Requirements for the content of sections of the feasibility study. Environmental justification of investment projects. The concept of environmental support of economic activities
Economic efficiency of investment projects	Methods for assessing the economic efficiency of investment projects. Performance indicators. Taking into account the time factor. The concept of project sustainability and its role in investment decisions
Environmental support of economic activities at the pre-project stage	Environmental support of economic activities at the pre-project stage. Basic documentation. Expertise of projects and ecological justification of projects. The concept of EIA as part of project documentation
Environmental support during the construction phase	Environmental support during the construction phase of the facility. Environmental impacts during construction of facilities and environmental optimization
Environmental support on the stages of operation and liquidation	The stage of operation of facilities and the stage of liquidation (completion of the project): the main types of environmental impact. Procedures and documentation for environmental support of economic activities.

5.2* Sections of disciplines and types of classes

№ п/п	Discipline section name	Lectures	Practical lessons	Independent work	Total hours
1.	Introduction	1	2	36	39
2.	Economic efficiency of investment projects	2	4	36	42
3.	Environmental support of economic activities at the pre-project stage	2	4	38	44
4.	Environmental support during the construction phase	2	4	38	44
5.	Environmental support on the stages of operation and liquidation	2	4	38	44

6. Laboratory workshop (if available) - NO

7. Practical lessons; seminars

Nr	Discipline section	Subjects of practical classes (seminars)	Total hours
1.	Introduction	Stages of environmental projects and life cycle of the project	2
2.	Economic efficiency of investment projects	Calculations of efficiency indicators	4
3	Environmental support of economic activities at the pre-project stage	Economic assessment of environmental support of economic activities at the pre-project stage	4
4	Environmental support during the construction phase	Economic assessment of environmental support of economic activities at the construction phase	4
5	Environmental support on the stages of operation and liquidation	Economic assessment of environmental support of economic activities at the stages of operation and liquidation	4

8. Material and technical base of the discipline:

An auditorium equipped with multimedia equipment and a personal computer with a standard package of office programs.

9. Information support of the discipline

When studying the discipline, traditional information technologies are used to present the theoretical part of the material by the teacher (PowerPoint presentation).

a) Software

MSWindows; MSOffice

b) databases, reference and search systems

www.mnr.gov.ru - site of the Ministry of Natural Resources of the Russian Federation;

<http://rpn.gov.ru/> - Federal Service for Supervision in the Sphere of Natural Resources (Rosprirodnadzor);
www.ecoindustry.ru - site of the journal "Production Ecology";
www.unep.org - site of the United Nations Environment Program;
www.wwf.ru - site of the World Wildlife Fund.
<http://burondt.ru/> - website of the BAT Bureau - information on the introduction of standardization based on the best available technologies
http://www.mnr.gov.ru/activity/directions/zelenye_standarty/zelenye_standarty/?sphrase_id=124597 - information on the development, application and implementation of "green standards"
http://www.mnr.gov.ru/activity/directions/natsionalnyy_proekt_ekologiya/ - information on the progress of the National Project "Ecology"

10. Literature

Basic list

1. Carroll B. et al. Environmental Impact Assessment Handbook: A practical guide for planners, developers and communities. – ICE Publishing, 2019. URL: <https://www.icevirtuallibrary.com/doi/pdf/10.1680/eiah3e.61415.fm>
2. Waxin M. F., Knuteson S. L., Bartholomew A. Drivers and challenges for implementing ISO 14001 environmental management systems in an emerging Gulf Arab country //Environmental management. – 2019. – T. 63. – №. 4. – C. 495-506. URL: <https://dspace.aus.edu/xmlui/bitstream/handle/11073/16260/2017%20Waxin%20et%20al%20EMS%20ACCEPTED3%20for%20AUS.pdf?sequence=5&isAllowed=y>

Additional list

- 1) Abrahamsen, E. B., Abrahamsen, H. B., Milazzo, M. F., & Selvik, J. T. (2018). Using the ALARP principle for safety management in the energy production sector of chemical industry. *Reliability Engineering & System Safety*, 169, 160-165.
- 2) Andrews, C. J., & Govil, S. (1995). Becoming proactive about environmental risks: regulatory reform and risk management in the US electricity sector. *Energy Policy*, 23(10), 885-892.
- 3) Barton, B., Redgwell, C., Rønne, A., & Zillman, D. N. (Eds.). (2004). *Energy security: managing risk in a dynamic legal and regulatory environment*. Oxford University Press on Demand.
- 4) Cerin, P. (2002). Communication in corporate environmental reports. *Corporate Social Responsibility and Environmental Management*, 9(1), 46-65.
- 5) Criscuolo, C., & Menon, C. (2015). Environmental policies and risk finance in the green sector: Cross-country evidence. *Energy Policy*, 83, 38-56.
- 6) Davies, G., Prpich, G., Strachan, N., & Pollard, S. (2014). *UKERC Energy Strategy Under Uncertainties: Identifying Techniques for Managing Uncertainty in the Energy Sector*. UKERC Working Paper UKERC/WP/FG/2014/0012014.
- 7) Davison, M., Gurtuna, O., Masse, C., & Mills, B. (2012). Factors affecting the value of environmental predictions to the energy sector. *Environmental Systems Research*, 1(1), 4.
- 8) Fidler, C., & Noble, B. (2012). Advancing strategic environmental assessment in the offshore oil and gas sector: Lessons from Norway, Canada, and the United Kingdom. *Environmental Impact Assessment Review*, 34, 12-21.

- 9) Finnveden, G., Nilsson, M., Johansson, J., Persson, Å., Moberg, Å., & Carlsson, T. (2003). Strategic environmental assessment methodologies—applications within the energy sector. *Environmental impact assessment review*, 23(1), 91-123.
- 10) Fortuński, B. (2008). Does the environmental management standard ISO 14001 stimulate sustainable development? An example from the energy sector in Poland. *Management of Environmental Quality: An International Journal*, 19(2), 204-212.
- 11) Greening, L. A., & Bernow, S. (2004). Design of coordinated energy and environmental policies: use of multi-criteria decision-making. *Energy policy*, 32(6), 721-735.
- 12) de Haes, H. A. U., & Heijungs, R. (2007). Life-cycle assessment for energy analysis and management. *Applied Energy*, 84(7-8), 817-827.
- 13) Ko, S., & Lee, K. W. (Eds.). (2012). *Risks and Opportunities of the Energy Sector in East Siberia and the Russian Far East: For Better Risk Management and Sustainable Energy Development* (Vol. 16). LIT Verlag Münster.
- 14) Lee, C. T., Rozali, N. E. M., Van Fan, Y., Klemeš, J. J., & Towprayoon, S. (2018). Low-carbon emission development in Asia: energy sector, waste management and environmental management system. *Clean Technologies and Environmental Policy*, 20(3), 443-449.
- 15) Omer, A. M. (2008). Energy, environment and sustainable development. *Renewable and sustainable energy reviews*, 12(9), 2265-2300.
- 16) Salzmann, O. (2008). *Corporate Sustainability Management in the Energy Sector*. Gabler.
- 17) Shiers, D. E. (2000). “Green” developments: environmentally responsible buildings in the UK commercial property sector. *Property Management*, 18(5), 352-365.
- 18) Sidortsov, R. (2014). Reinventing rules for environmental risk governance in the energy sector. *Energy Research & Social Science*, 1, 171-182.
- 19) Stjepcevic, J., & Siksnelyte, I. (2017). Corporate social responsibility in energy sector. *Transformations in Business & Economics*, 16(1), 40.
- 20) Xavier, R., Komendantova, N., Jarbandhan, V., & Nel, D. (2017). Participatory governance in the transformation of the South African energy sector: Critical success factors for environmental leadership. *Journal of Cleaner Production*, 154, 621-632.

11. Methodical instructions for students on mastering the discipline (module)

Independent work of students includes:

- individual study of theoretical material on the subject of the course (links to information sources are presented in the previous sections);
- study of additional material;
- preparation of abstracts on the topics specified in the program.

11.1. Independent study of additional theoretical material is carried out by students on an individual basis; the list of recommended information sources is given above.

11.2. Requirements for writing abstracts

Academic ethics, respect for copyright. In the first lesson, students are informed about the need to comply with the norms of academic ethics and copyright during their studies. In particular, information is provided:

- general information about copyright;
- citation rules;
- link formatting rules

All footnotes in the text are carefully checked and provided with “addresses”. It is not permissible to include in your work excerpts from the works of other authors without indicating this, to retell someone else's work close to the text without referring to it, to use other people's ideas without indicating the primary sources. This also applies to sources found on the Internet. You must specify the full site address. All cases of plagiarism must be excluded. If unjustified and incorrect borrowings are identified, the abstract is not accepted.

When preparing written works, the following must be submitted without fail: work plan; a list of used literature, drawn up in accordance with the current rules for the bibliographic description of used sources.

For the preparation of the abstract, only special relevant sources should be used. In addition to abstracts, the subject of which is related to the dynamics of any phenomena over many years, or the historical development of scientific views on any problem, sources should be used for a period of no more than 10 years.

The prepared essay should be presented at one of the classes in agreement with the teacher. Use of PowerPoint presentations (or those prepared using similar licensed or free software) is encouraged, but not required. The approximate time of the presentation is up to 15 minutes. The structure of the report and additional requirements for the quality of materials are determined by the chosen topic and are additionally discussed with the teacher.

12. Fund of appraisal funds for intermediate certification of students in the discipline (module) (developed in accordance with the requirements of the "Regulations for the formation of funds of appraisal funds", approved by order of the rector dated 05.05.2016 No. 420).

Department of Applied Ecology

APPROVED

at the meeting of the department

August 28, 2019, minutes No. 1

Head of the Department

_____ М.М. Redina

(подпись)

VALUATION FUND

ON THE EDUCATIONAL DISCIPLINE

ECOLOGIC-ECONOMICAL ASPECTS OF ENVIRONMENTAL PROJECTS

direction 05.04.05 "Ecology and nature management"

Program:

Economics of natural resources management

Qualification (degree) of the graduate –

Master of Ecology and Nature Management

Passport of the fund of assessment tools by discipline

Direction 05.04.6 «Экология и природопользование»:

Discipline: ECOLOGIC-ECONOMICAL ASPECTS OF ENVIRONMENTAL PROJECTS

Code Б1.В.05

12.1. Балльно-рейтинговая система оценки и характеристика шкалы оценивания

Rating assessment system and characteristics of the assessment scale

Балльно-рейтинговая система оценки и характеристика шкалы оценивания

Controlled competence code or part thereof Код контролируемой компетенции или ее части	Controlled discipline topic Контролируемая тема дисциплины	Forms of control ФОСы (формы контроля уровня освоения ООП)					Topic points Баллы темы
		Classroom work Аудиторная работа			Самостоятельная работа	Экзамен	
		Test / Тест	Test work Контрольная работа	Class work Работа на занятии	Report Доклад seminar report		
GPC- 4 PC-1, 3	Introduction	X		10			4
GPC- 6 PC-1, 3	Economic efficiency of investment projects	X		12			4
GPC- 4, 6 PC-1, 3	Environmental support of economic activities at the pre-project stage	X		12			6
GPC- 4, 6 PC-1, 3	Environmental support during the construction phase	X		10			8
GPC- 4, 6 PC-1, 3	Environmental support on the stages of operation and liquidation	X		12			10
	Exam Экзамен		15	56	15	14	

12.2 The maximum number of credits in the course is 3. At the same time, the following ratio is established between the number of points and the number of credits:

Points to credits ratio

Total points	Final assessment	Amount of credits
91	5	3
91-100	5	3
86 - 91	5 (B)	3

71-85	4 (C)	2
61-70	3+ (D)	1
51 - 60	3 (E)	1
21 - 51	2 (FX)	0
<21	2 (F)	0

6. Deciphering of grades is also accepted according to the specified document:
7. - A: "Excellent" - the theoretical content of the course has been fully mastered, without gaps, the necessary practical skills for working with the material learned have been formed, all the educational tasks provided for by the training program have been completed, the quality of their implementation was assessed by the number of points close to the maximum.
8. - B: "Very good" - the theoretical content of the course is mastered completely, without gaps, the necessary practical skills of working with the acquired material are basically formed, all the educational tasks provided for by the training program are completed, the quality of most of them is assessed by the number of points close to the maximum ...
9. - C: "Good" - the theoretical content of the course has been mastered completely, without gaps, some practical skills of working with the mastered material are not sufficiently formed, all the educational tasks provided for by the training program have been completed, the quality of performance of none of them has not been assessed with a minimum number of points, some types of tasks have been completed with mistakes.
10. - D: "Satisfactory" - the theoretical content of the course is partially mastered. but the gaps are not significant, the necessary practical skills to work with the acquired material are basically formed, most of the educational tasks provided for in the training program have been completed, some of the completed tasks may contain errors.
11. - E: "Mediocre" - the theoretical content of the course is partially mastered, some practical skills have not been formed, many of the educational tasks provided for by the training program have not been completed, or the quality of some of them is assessed by the number of points close to the minimum.
- FX: "Conditionally unsatisfactory" - the theoretical content of the course has been partially mastered, the necessary practical skills have not been formed, most of the educational tasks provided for by the training program have not been completed, or the quality of their implementation was assessed by the number of points close to the minimum; with additional independent work on the course material, it is possible to improve the quality of completing educational tasks.
- F: "Certainly unsatisfactory" - the theoretical content of the course has not been mastered, the necessary practical skills are not formed, all the completed study tasks contain gross errors, additional independent work on the course material will not lead to any significant improvement in the quality of the study tasks.

12.3 List of competencies and stages of their formation

Nr.	Code and name of competence
1	GPC-4 Ability to apply normative legal acts in the field of ecology and nature management, norms of professional ethics
2	GPC-6 Ability to carry out critical analysis, apply a systems approach in the field of the digital economy

3	PC-1 the ability to formulate problems, tasks and methods of scientific research, generalize the results obtained, formulate conclusions and practical recommendations based on research results
4	PC-3 knowledge of the basics of design, expert and analytical activities and the implementation of research using modern approaches and methods, equipment and computing systems

12.4. Typical control tasks or other materials necessary to assess knowledge, skills, skills and (or) experience of activities, characterizing the stages of the formation of competencies in the process of mastering the educational program

Questions to prepare for certification

1. Give the definition of the project. What are the main types of projects?
2. What stages does the design process include? Give a brief description of them.
3. What projects are classified as investment and construction projects? Briefly describe the main content of their stages.
4. What is green design? Give examples of environmental projects.
5. What are environmental restrictions? Give examples.
6. Give a brief description of the regulatory legal framework for environmental design.
7. What features are typical for environmental projects?
8. How is economic activity within the boundaries of sanitary protection zones regulated?
9. How is economic activity regulated within protected natural areas?
10. Give the basic principles of environmental design. Give comments.
11. What is a project feasibility study? What are the main blocks it includes?
12. Expand the content of the environmental justification of projects.
13. Describe the concept of "environmental support of economic activities." Give examples of types of environmental support.
14. What are the main stages of the investment and construction project. Describe the place of environmental management procedures at these stages.
15. What are the features of investment environmental projects?
16. What indicators are used to assess the priority of investment environmental projects?
17. On the basis of what documents is the environmental assessment of investment projects carried out in foreign organizations?
18. What are the main stages of the design of economic activities.
19. What main sections should include investment projects in accordance with the requirements of international documents?
20. Give examples of environmental protection projects.
21. What indicators are used to assess environmental investments?
22. Give a brief description of informal methods for evaluating investment projects. What is the role of environmental criteria in such assessments?
23. Describe the features of environmental investment projects in terms of assessing their effectiveness.
24. How is the environmental justification of investment and construction projects carried out?
25. Expand the content of the section of projects "List of measures for environmental protection".
26. What activities can be attributed to environmental protection during the design? On the basis of what documents can an action be considered as an environmental one?
27. Give a brief description of the national EIA procedure.

28. Describe the methodological approaches to the EIA.
29. What are the main features of foreign EIA procedures? How do they differ from Russian practice?
30. Give a brief description of the stages of pre-project support of economic activities.
31. On the basis of what documents are environmental engineering surveys carried out for construction?
32. What studies are included in the environmental engineering surveys for construction?
33. For what purposes can the information obtained during engineering and environmental surveys be used?
34. What are the main tasks of environmental engineering surveys for the development of pre-design documentation?
35. What research is carried out in the course of engineering and environmental surveys for the development of pre-design documentation?
36. What are the main tasks of environmental engineering surveys for the development of project documentation?
37. What research is carried out in the course of environmental engineering surveys for the development of project documentation?
38. Is it possible to conduct engineering and environmental surveys in conjunction with other types of research?
39. Who finances the environmental engineering research?
40. Briefly describe the impact of construction production on the environment. What are the main procedures involved in environmental support at this stage?

12.4. Methodological materials defining the procedures for assessing knowledge, skills, and activity skills, characterizing the stages of the formation of competencies).

The assessment of knowledge, skills and abilities is carried out using the components of the WCF presented in paragraphs. 12.1-12.34, in accordance with the sequence of acquisition of competencies indicated in table. p. 12.2.

The program is compiled in accordance with the requirements of the ES HE RUDN / FGOS HE.

Developers:

Professor of the Department of Applied Ecology

Khaustov A.P.

подпись

Head of the Department

applied ecology

M.M. Redina

название кафедры

подпись

инициалы > фамилия