

*Federal state autonomous educational institution of higher professional education
"People's Friendship University of Russia"*

Ecological faculty

Program of the State Certification

Level of Higher Education

Direction 05.06.01 "Earth Sciences"

Profile: Ecology: Modern environmental studies

(наименование образовательной программы в соответствии с направленностью (профилем))

Graduate qualification Researcher. Research teacher

указывается квалификация выпускника в соответствии с приказом Минобрнауки России от 12.09.2013г. №1061)

1. General provisions

1.1. Responsibility and procedure for the preparation and conduct of state final certification at RUDN University, as well as the list, sequence, timeframes for passing the documents necessary for the implementation of state final attestation, between the structural divisions, is determined by the Procedure for the final state attestation of students.

1.2. State final certification in the direction 05.06.01 of Earth Sciences includes the state examination and defense of the final qualification work in the form of Scientific qualification work.

1.3. The results of any of the types of attestation tests included in the state final attestation are determined by the marks "excellent", "good", "satisfactory", "unsatisfactory".

1. Goals and objectives of the state final certification

2.1. The purpose of the state final certification is to determine the compliance of the results of mastering the basic educational programs with the requirements of the ES HE RUDN.

State final certification includes a state examination established by the Academic Council of the University, and (or) the defense of the scientific qualifying work (WQ).

2.2. The tasks of the state final certification are:

- checking the quality of education a person to basic natural science laws and phenomena necessary in professional activity;
- determination of the level of theoretical and practical readiness of the graduate student to perform professional tasks in accordance with the acquired qualifications;
- establishing the degree of a person's aspiration for self-development, improving their qualifications and skills;
- checking the formation of stable motivation for professional activity in accordance with the types of professional activity provided for by the ES of the RUDN University;
- checking the ability to find organizational and managerial solutions in non-standard situations and the willingness to bear responsibility for them;
- ensuring the integration of education and scientific and technical activities, increasing the efficiency of using scientific and technological achievements, reforming the scientific sphere and stimulating innovation;
- ensuring the quality of training in accordance with the requirements of the ES VO RUDN University.

1. State examination program.

1.1. The state exam is carried out in the form of a test

1.1. As part of the state exam, the degree of development of graduates of the following competencies is checked:

OPC-1; OPC -2; PC -1; PC -2; PC -3; PC -4; BC-1; BC -2; BC -3; BC -4; BC -5

1.1. State exam volume: number of questions in the test: 40

The list of issues of the final state certification. Pedagogy of Higher Education section

1. General characteristics of the main theoretical and methodological aspects of the pedagogy of higher education.
2. Modern education development in Russia and abroad.
3. Fundamental education in higher education.
4. The object and subject of study of pedagogy and psychology of higher education.
5. Brief description of the current state of higher education in Russia.
6. Modern trends in the development of higher education abroad and the prospects for the development of higher education.

7. Informatization of education in higher education.
8. General characteristics of the main theoretical and methodological aspects of the pedagogy and psychology of higher education.
9. Modern education development in Russia and abroad.
10. Fundamental education in higher education.
11. The object and subject of study of pedagogy and psychology of higher education.
12. Brief description of the current state of higher education in Russia.
13. Current trends in the development of higher education abroad and the prospects for the development of higher education.
14. Bologna Declaration and the Bologna Process.
15. Didactics of high school. The general concept of didactics.
16. The essence of the competence approach in education.
17. Characteristics of the structure of pedagogical activity.
18. Pedagogical abilities and pedagogical skills of a higher school teacher.
19. Forms of organization of the educational process in higher education.
20. Active self-consciousness as the main characteristic of the subject of education in higher education.
21. The general concept of activity.
22. Activities and cognitive processes. Cognition as an activity.
23. Trends in the development of innovation in higher education.
24. Problems of innovation activities of higher school teachers.
25. The role and place of lecture at the university.
26. Seminars and practical classes in high school.
27. Independent work of students as the development and self-organization of the personality of students.
28. Fundamentals of pedagogical control in higher education.
29. The introduction of science and the spread of advanced educational experience as an innovation process in higher education.
30. Pedagogical design in higher education.
31. Pedagogical technologies and their classification.
32. Modular training in the context of modernization changes in the Russian system of higher vocational education.
33. The concept and principles of modular training.
34. Problem learning technology.
35. Trends and ideas for the development of innovative activities of higher school teachers.
36. Technology sign-context learning. Business game as a leading form.
37. Characteristics of the case method.
38. Characteristics of the project method.
39. Heuristic learning technologies.
40. Technology developmental learning.
41. Distance learning technology.
42. Onlain training based on webinar technology.
43. The theory of systematic formation of mental actions as an example of the consistent implementation of the activity approach in learning.
44. Personality psychology and problems of education in higher education.
45. Characteristics of the structure of personality.
46. Characteristics of personality development.
47. The development of creative thinking of students in the learning process.
48. Psychodiagnostics in higher education.
49. Analysis of the professional activity of a university teacher.
50. Psychological factors of successful training of students in high school.

The list of questions of the final state certification in terms of SPECIALTY ECOLOGY (in biological, chemical, medical, technical sciences)

1. A brief determinant of modern sciences. Matches in science.
2. Paradoxes of scientific creativity
3. Aspects of research and education methodology
4. The hidden mechanisms of scientific creativity and ethics of the researcher.
5. The problem of waste generation.
6. Waste in the environment. Stability and resistance of ecosystems to pollution.
7. Ensuring environmental safety in the management of waste. Documenting waste management activities.
8. The purpose and objectives of environmental certification of products.
9. Voluntary and mandatory conformity assessment.
10. Participants of certification and its order.
11. The system of foreign certification.
12. ISO 9000 quality system certification
13. International standardization in the field of environmental protection.
14. Environmental certification.
15. Eco-labeling.
16. Certification of an integrated quality management system and food safety management based on process approaches ISO 22000: 2005.
17. The subject, content and tasks of modern ecology.
18. The main units of modern ecology.
19. Major environmental factors
20. Abiotic and biotic environmental factors
21. Anthropogenic factors
22. Ecological systems. The concept of ecosystems.
23. Energy in ecosystems. Food chains, food webs and trophic levels.
24. Biogeochemical cycles. Structure and main types of biogeochemical cycles.
25. Population ecology.
26. Ecology of communities. Biocenosis and synecology.
27. Development and evolution of ecosystems. Ecological succession.
28. Biosphere - global ecosystem.
26. Conservation of nature. Biodiversity and problems of its preservation.
27. Environmental risks.
28. Environmental monitoring.
29. Human ecology. Assessment of public health in connection with environmental pollution
29. General concepts about the relationship of man with the environment.
30. Hygienic assessment of environmental pollution.
31. Public health and the environment. Mother and child health.
32. Population health indicators. General morbidity.
33. Factors affecting health.
34. Diseases associated with environmental pollution.
35. The effect of air pollution on human health.
36. Noise pollution.
37. The impact of negative environmental factors on the protective systems of the human body.
38. Systems of perception and compensation of adverse environmental conditions of the habitat.

39. The combined effect of harmful factors.
40. The impact of hazardous and harmful factors on humans and principles for establishing standards.
41. The concept of occupational hazards.
42. Principles of establishing the remote control exposure of harmful and dangerous factors, physical criteria and principles of establishing standards.
43. Adaptation and homeostasis.
44. The role of the regulation of anthropogenic loads in the environmental management system.
45. The main directions of environmental regulation.
46. The concept of "sustainability of natural systems."
47. The concept of the best available technologies and the prospects for this area of standardization. Green standards.
48. The main directions of ecological rationing of the quality of the atmosphere. Air quality criteria. The role of environmental standards in the implementation of measures for the protection of atmospheric air.
49. The main directions of environmental regulation in the field of water use. Criteria for assessing the status of water resources. Environmental standardization in the field of protection and use of surface and groundwater.
50. Assessment of soil and land resources. Land use regulations and theoretical foundations for their development. Determination of critical loads on soil and land resources.
51. Standards of quality of soil and land resources: the current state and the main prospects for development. Measures for the protection of soil and land resources: their development and implementation, taking into account environmental standards.
52. The main directions of environmental regulation in the field of waste production and consumption. Features of the Russian system of rationing of waste and their danger to humans and the environment. The concept of secondary material resources.
53. Criteria of a condition of bioresources and their substantiation. Examples of standards for exposure to biological resources.
54. Economic regulation of environmental management and environmental regulation.
55. Production and resource rationing: development of environmental impact standards for enterprises. Stages of development of standards for maximum permissible emissions for enterprises.
56. International cooperation in the field of environmental regulation. Management standards in the field of environmental protection and the use of natural resources.
57. Energy Efficiency Ratio and International Energy Standards.

4. Guidelines for the preparation and passing of the final state exam

54.1. Recommended literature

- 1) Nahid Shirani Bidabadi, Ahmmadreza Nasr Isfahani, Amir Rouhollahi, Roya Khalili Effective Teaching Methods in Higher Education: Requirements and Barriers J Adv Med Educ Prof. 2016 Oct; 4(4): 170–178. URL: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5065908/>
- 2) Michaela Sepešiová TEACHING MODES IN HIGHER EDUCATION <https://www.pulib.sk/web/kniznica/elpub/dokument/Strakova2/subor/Sepesiova.pdf>

- 3) Helen Patrick, Lynley H. Anderman, Paige S. Bruening, Lisa C. Duffin *The Role of Educational Psychology in Teacher Education: Three Challenges for Educational Psychologists*. Available from:
https://www.researchgate.net/publication/233367357_The_Role_of_Educational_Psychology_in_Teacher_Education_Three_Challenges_for_Educational_Psychologists
- 4) Scott Simkins, Mark Maier *Just in Time Teaching: Across the Disciplines, and Across the Academy (New Pedagogies and Practices for Teaching in Higher Education)* Stylus Publishing; 1st edition (November 6, 2009) 224 pages
- 5) Professor Peter Mortimore *Understanding Pedagogy: And Its Impact on Learning* SAGE Publications Ltd; 1st edition 1999? 256 pages
- 6) Jane Pearce *Identity and Pedagogy: Critical Reflections on Teaching in a University* VDM Verlag, 2008, 180 pages
- 7) Aaron S. Richmond, Guy A. Boysen, Regan A R Gurung *An Evidence-based Guide to College and University Teaching: Developing the Model Teacher* Routledge; 1st edition 2016, 228 pages
- 8) Clark Aldrich *Learning by Doing: A Comprehensive Guide to Simulations, Computer Games, and Pedagogy in e-Learning and Other Educational Experiences* Pfeiffer, 2005, 400 pages
- 9) *A handbook for teaching and learning in higher education : enhancing academic practice / [edited by] Heather Fry, Steve Ketteridge, Stephanie Marshall.*—3rd ed. p.544

Speciality

1. Eugene Odum, Gary W. Barrett *Fundamentals of Ecology* Brand: Cengage Learning 2004 624 pages
2. Burrirt Roger. *Environmental Management Accounting and Supply Chain Management [Электронный ресурс] : Contributed volume / R. Burrirt, S. Schaltegger. - Электронные текстовые данные. - 2011. - (Eco-Efficiency in Industry and Science, ISSN 1389-6970 ; 27).*
3. *Integrated Resource and Environmental Management. Concepts and Practice / Ed. by K.S.Hanna, D.S.Slocombe. - Книга на английском языке. - Oxford : Oxford University Press, 2007.*
4. *Environmental Management: readings and Case Studies [Текст] / Edited by L.A.Owen, T.Unwin. - Книга на английском языке. - Oxford; Malden : Blackwell Publishers, 1997. - 492 p.*
5. *THE CONCEPTS OF STANDARDS, CERTIFICATION AND LABELLING Guidelines for Single Laboratory Validation of Chemical Methods for Dietary Supplements and Botanicals* http://www.aoac.org/aoac_prod_imis/AOAC_Doc
6. *THE CONCEPTS OF STANDARDS, CERTIFICATION AND LABELLING /StandardsDevelopment/SLV_Guidelines_Dietary_Supplements.pdf*
7. Emilia Kolarzyk *Selected topics on hygiene and human ecology* <http://www.zhid.wl.cm.uj.edu.pl/documents/2225372/33843371/main.pdf>
8. *OCCUPATIONAL SAFETY AND HEALTH CENTER DEPARTMENT OF LABOR AND EMPLOYMENT* Intramuros, Manila February 2005-May 2013

9. Principles of Physiological Regulation of the Body Functions in Incomplete Adaptation S. G. Krivoshchekov, G. M. Divert
10. Smedley Julia. Oxford Handbook of Occupational Health / J. Smedley, F. Dick. - Книга на английском языке. - New York : Oxford University Press, 2008. - 932 p.
11. Demographic toxicity: Methods in Ecological Risk Assessment / Edited by Аксакава Н. Resit, Stark John D., Bridges Todd. - Книга на английском языке. - New York : Oxford University Press, 2008. - 277 p. : il. - Приложение: CD-ROM. - ISBN 978-0-19-533296-4 : 3617
12. Waste Management Practices: Literature Review Dalhousie University Office of Sustainability Gary Davidson, 2011
13. Environmental management The ISO 14000 family of International Standards Environmental Management ISO Central Secretariat 2009 www.iso.org
14. Pooja Aro, Smita Chaudhry ISO 14000-its Structure and Benefits □ IInd International Conference on Environmental Management (ICEM 2010) At: Hyderabad Volume: II
15. Marc Bartholomy, Ella Omelchenko, Dmitrii Tolkachev and Maria Chivragova, Clifford Chance Environmental law and practice in the Russian Federation: overview [https://uk.practicallaw.thomsonreuters.com/w-013-5609?transitionType=Default&contextData=\(sc.Default\)&firstPage=true](https://uk.practicallaw.thomsonreuters.com/w-013-5609?transitionType=Default&contextData=(sc.Default)&firstPage=true)
16. Principles of the State policy in the area of environmental development of the Russian Federation for the period up to the year 2030
17. Non-official translation of [ОСНОВЫ ГОСУДАРСТВЕННОЙ ПОЛИТИКИ В ОБЛАСТИ ЭКОЛОГИЧЕСКОГО РАЗВИТИЯ РОССИИ НА ПЕРИОД ДО 2030 ГОДА](#) by W.Th. Douma (T.M.C. Asser Institute) with the help of D.N. Ratsiborinskaya (Erasmus University Rotterdam) 8 pages
18. GRATA International Russian Federation: A Brief Overview Of The Changes In The Environmental Legislation Of The Russian Federation 2020 <https://www.mondaq.com/russianfederation/waste-management/948712/a-brief-overview-of-the-changes-in-the-environmental-legislation-of-the-russian-federation>
19. Chong, H.G., (2008), "The Environmental Management System as a Competitive Advantage Tool for Organizations", The Journal of Accounting and Finance, The Research Development Association, Jaipur, October-March, Vol.22, No. 1, pp. 71-78.
20. UNEP (2002) Environmental impact assessment training resource manual (2nd edition), www.earthprint.com www.unep.ch/etu/publications
21. Ramsar Convention Secretariat (2004) Ramsar handbooks for the wise use of wetlands, Volume 11 Impact Assessment. (http://indaba.iucn.org/ramsarfilms/lib_handbooks_e11.pdf) Precautionary Principle. (<http://www.pprinciple.net/index.html>)
22. Ridgway, B., M. McCabe, J. Bailey, R. Saunders, B. Sadler. 1996. Environmental Impact Assessment Training Resource Manual. Prepared for the United Nations Environment Programme by the Australian Environment Protection Agency. Nairobi, Kenya.
23. Environmental Management Tools and Techniques A Learning Material ROYAL GOVERNMENT OF BHUTAN NATIONAL ENVIRONMENT COMMISSION Environmental Management Tools and Techniques National Environment Commission P.O. Box 466, Thimphu, Bhutan www.nec.gov.bt
24. HANDBOOK ON RENEWABLE ENERGY SOURCES ENERGY Efficiency and Renewables—SUPPORTING Policies in Local level for ENERGY” (ENER SUPPLY) http://www.ener-supply.eu/downloads/ENER_handbook_en.pdf

Additional recommendations The computer test consists of 40 questions with different choice of answers: with the choice of one correct answer out of many, with the choice of several correct answers out of many.

Evaluation tools designed to establish, during certification tests, the compliance / non-compliance of the level of training of graduates who have completed the development of EP HE in the direction of training / specialty, the requirements of the corresponding OS of VO RUDN.

6. Requirements for the scientific qualifying work

6.1. A student who has passed the state exam (if any) is allowed to defend the scientific qualifying work. The defense of the SQW is held at an open meeting of the State Examination Commission (SEC).

State final certification is carried out in the form of an oral presentation of the scientific report, followed by oral answers to questions from the SEC members in accordance with the University Regulations on SQW. The report and / or answers to questions from the SEC members may be in a foreign language.

6.2. As part of the defense of a scientific report on the main results of the prepared scientific and qualification work (dissertation), the degree of development of graduates of the following competencies is checked:

OPC-1; OPC -2; PC -1; PC -2; PC -3; PC -4; BC-1; BC -2; BC -3; BC -4; BC -5

6.3. List of topics for scientific qualification work (dissertation): It is determined by the topics of the receiving countries and the direction of research of scientific leaders from the graduating departments of the faculty.

6.4. The stages of the scientific qualification work (SQW), the conditions for admission of the student to the defense procedure, the requirements for the structure, volume, content and design, as well as the list of mandatory and recommended documents submitted for defense are indicated in the methodological instructions approved in the prescribed manner: registration of a scientific and qualification work (dissertation) on training programs for highly qualified personnel at the Peoples' Friendship University of Russia (Adopted by the RUDN Academic Council on December 26, 2016)

6.6 Evaluation Tools.

The appraisal funds are presented in the form of a fund of appraisal funds for the final (state final) certification, namely: - a list of competencies that students must master as a result of mastering the educational program; - description of indicators and criteria for assessing competencies, as well as assessment scales; - typical tasks or other materials necessary to assess the results of mastering the educational program; - methodological materials that determine the procedures for assessing the results of mastering the educational program.

The program has been drawn up in accordance with the requirements of the ES of HE RUDN University.

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