

DISCIPLINE ANNOTATION

Education Programs in all fields of postgraduate study

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| Discipline | <i>Pedagogy of Higher Education</i> |
| Total | 2 credits (72 hours) |
| Contents | |
| Units | Topics |
| Unit 1. Pedagogy of higher education as a field of study and academic subject area. | 1. Pedagogy as a science, key concepts. Pedagogy of higher education in the system of pedagogical science. 2. Systems of higher education: comparative analyses. 3. Contemporary trends in higher education. Internationalization of higher education. |
| Unit 2. Didactics of higher education. | 1. General aspects of didactic system. 2. Content of higher education (laws and regulations; main principles of selecting content). Curriculum and course syllabus. 3. Forms and methods of teaching. Lecture in modern higher education. Seminars, practical training, laboratory class. Project – working. 4. Students' individual work. 5. Interactive methods of teaching (discussions, case-study, training, professional simulation etc.). 6. ICT in modern higher education. 7. Monitoring and evaluation of academic performance. Point rating system. |
| Unit 3. Educational environment of modern university. | 1. Faculty members' rights and responsibilities. Professional ethics. 2. Faculty interaction with students: case study. 3. Educational potential of extra-curricular activities. |

Author:

Associate Professor of the
Psychology and Pedagogy Department



O.K. Logvinova

**The Head of the
Psychology and Pedagogy Department**



N.B. Karabushchenko

Ecological Faculty

COURSE UNIT ANNOTATION¹

Curriculum

05.06.01 "Earth Sciences"/ «Науки о Земле»

Modern environmental studies / Современные исследования окружающей среды

| | |
|---|--|
| Course area | Academic English |
| Course area | Academic English |
| Earned hours | 4 credit units (144 hrs) |
| Curriculum briefing | |
| Course unit | Content of course unit |
| Academic writing | Written scientific work, its varieties: analytical essay, scientific article, scientific report. Structure and rules of registration of scientific works. Rules for citing, making footnotes. The rules for compiling bibliography in the Russian and English scientific text. The practice of writing a scientific article, an analytical essay, a scientific report. |
| Business correspondence in research activities | Correspondence with international publishers, reviewers, colleagues, conference organizing committees, grantors. Types of letters. The structure and content of business letters. |
| Academic speaking | Presentation of the report (with multimedia presentation) on the research topic. Scientific discussion. Speech models, cliché, in oral scientific communication. Scientific presentation. Presentation rules for an international scientific conference. Language material: orthoepic, lexical, grammatical, stylistic norm of scientific speech. Lexical minimum - 5,000 units, including 500 specialty terms |

Prepared by:

Assc. Prof. Dr. of Foreign lang. Dept.
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M.A. Rudneva

Head of Foreign lang. Dept.
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N.G. Valeeva

Line Director



N.A. Chernykh

*Federal State Autonomous Educational Institution of Higher Education
"Peoples' Friendship University of Russia"*

Ecological Faculty

COURSE UNIT ANNOTATION¹

Curriculum

05.06.01 "Earth Sciences"/ «Науки о Земле»

Modern environmental studies / Современные исследования окружающей среды

| | |
|--|---|
| Course area | Foreign Language |
| Earned hours | 5 credit units (180 hrs) |
| Curriculum briefing | |
| Course unit | Content of course unit: |
| Academic writing | Plan, theses, report, report on the research topic. Written reviewing and annotating of scientific information from various sources. Business letter. |
| Academic speaking | Message / conversation on the subject of dissertation research. Report (with multimedia presentation). Academic discussion. Oral reviewing and annotating of academic literature. Language material: orthoepic, lexical, grammatical, stylistic norm of scientific speech. Lexical minimum - 4500 units, including 500 specialty terms |
| Translation of specialized academic texts | Scientific translation. Basic concepts of scientific translation. Lexical-grammatical and stylistic features of scientific translation. Translational transformations. ICT is translated. Design and editing of the translation. Full, summarized, abstract translation. Workshop of written translation of a scientific text from a foreign language into Russian on the subject of research (using dictionaries, reference books, ICT). |

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N.G. Valeeva

Line Director



N.A. Chernykh

Faculty of humanities and social sciences

ANNOTATION OF THE ACADEMIC DISCIPLINE

Education programs in all fields of postgraduate study

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|--|--|
| Course Title | History and Philosophy of Science |
| Course Scope | 4 credits (144 hours) |
| COURSE SUMMARY | |
| Course Units (Topics) | Course Units (Topics) Outline: |
| The subject and the basic concepts of modern philosophy of science | Philosophy of science as the study of the general laws of scientific knowledge in its historical development and changing social and cultural context. Evolution of approaches to the science analysis. Logical and epistemological approach to the study of science. Positivist tradition in the philosophy of science. The expansion of the field of philosophical problems in postpositivist philosophy of science. The sociological and cultural approaches to the study of science. Internalism and externalism. |
| Science in the culture of modern civilization | Traditionalist and technogenic types of civilization development and its basic values. The role of science in modern education and the formation of personality. The functions of science in society |
| The appearance of science and the main stages of its historical evolution | The culture of the ancient polis and rising of the first forms of theoretical science. Antique logic and mathematics. Western and Eastern science in the middle ages. Formation of experimental science in modern European culture. Background of the experimental method and its connection with the mathematical description of nature. Science as a profession. The appearance of the disciplinary organized science. Formation of Technical Sciences. Formation of social sciences and humanities. |
| The structure of scientific knowledge | The variety of types of scientific knowledge. Empirical and theoretical levels, the criteria of its distinction. Features of the empirical and theoretical language of science. The structure of empirical knowledge. Experiment and observation. Empirical dependence and empirical facts. The structure of theoretical knowledge. The primary theoretical models and laws. The developed theory. Theoretical models as part of the internal organization of theory. The deployment of the theory as a process of problem solving. Ideals and norms of research. The scientific picture of the world. Its historical forms and functions. The philosophical foundations of science. |
| The dynamics of science as a process of generating of new knowledge | Historical variability of mechanisms of generation of scientific knowledge. Formation of the primary theoretical models and laws. The role of analogies in theoretical search. Problem of justification of theoretical knowledge. The mechanisms of the development of scientific concepts. Formation of advanced scientific theory. Problem situations in science. |
| Scientific traditions and scientific revolutions. Types of scientific rationality | The interaction of tradition and the emergence of new knowledge. Scientific Revolution as rebuilding of the foundations of science. Problems of typology of scientific revolutions. Internal disciplinary mechanisms of scientific revolutions. Global Revolutions and the types of scientific rationality. Historical change of types of scientific rationality: classical, nonclassical, post-nonclassical science. |
| Features of the present stage of development of science | Prospects of scientific and technical progress. Modern processes of differentiation and integration of sciences. The links of disciplinary and problem-oriented research. Global evolutionism as a synthesis of evolutionary and systemic approaches. New ethical challenges of science in the late XX century. Humanitarian control problem in the science and high technologies. Environmental and socio-humanitarian examination of |

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| | scientific and technical projects. Scientism and anti-scientism. Science and pseudoscience. The role of science in addressing the current global crises. |
| Science as a social institution | Scientific communities and their historical types. Scientific schools. Training of scientists. The historical development of methods of translation of scientific knowledge. Science and economics. Science and power. The problem of state regulation of science. |
| Modern philosophical problems of specific scientific disciplines | <i>Depending on the field of postgraduate study</i> |

Developers:

History of philosophy

 name of the department

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Nizhnikov S.A.

 full name

Specialty Supervisor:

 name of the department

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 full name

Ecological faculty

ANNOTATION OF THE ACADEMIC DISCIPLINE

05.06.01 Earth Sciences

Specification Ecology: Modern environmental studies

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|---|--|
| Course Title | Human ecology and hygiene of environment |
| Course Scope | 4 credits (144 hours) |
| COURSE SUMMARY | |
| Course units (Topics) | Course units (Topics) Outline |
| Introduction to the course | General concepts about the human relationship with the environment |
| Public health and the environment | Maternal and child. Indicators of population health. The overall incidence. Health workers in various sectors of the economy. Solving problems on the severity of the labor process. Solving problems on the labor intensity of the process. Problem solving Review of accidents at work. |
| Factors affecting health | Diseases related to environmental pollution. The impact of air pollution on human health. Noise pollution. Hygienic evaluation of environmental pollution: air, water. Hygienic evaluation of environmental pollution: soil, waste. The impact of negative environmental factors on the safety systems of the human body. Systems of perception and compensate for adverse external environmental conditions. The impact of air pollution on human health. Chemical water pollution. Microbiological contamination of the water. |
| The principles establish the remote control harmful and dangerous factors | The impact of hazardous and harmful factors on human principles and the establishment of norms. The objectives and principles of valuation. The principles establish the remote control harmful and dangerous factors, the physical criteria and principles established norms. Natural systems provide protection of the human body. Adaptation and homeostasis. Psychological defense system of the body. Decision and preparation of case studies on the topics studied. Simulation of emergencies. |

Developer:

Associate Professor, Department of Forensic Ecology
with Human Ecology Course



_____ Rodionova Olga M.

The Head of the program
professor



_____ Chernykch Natalia A.

Ecological faculty

ANNOTATION OF THE ACADEMIC DISCIPLINE

05.06.01 Earth Sciences

Specification Ecology: Modern environmental studies

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|--|---|
| Course Title | Methodology of scientific research |
| Course Scope | 3 credits (108 hours) |
| COURSE SUMMARY | |
| Course units (Topics) | Course units (Topics) Outline |
| introduction | Modern science. Why do science. Summary determinant owls belt Sciences. Matches in science. Own scientific work. |
| Paradoxes of scientific creativity | Hurry slowly, Title, Table of Contents, epigraph, first line, last paragraph, do everything myself, do it all at once, |
| Aspects of the methodology of scientific research and education | Features of collective scientific activity: |
| Hidden mechanisms of scientific creativity and ethics researcher. | three stages of scientific creativity. as an expression of the individual researcher. responsibilities of the researcher. The norms of scientific ethics |
| Main features of the research | Prospect-thesis plan; justification of urgency topics; problem, object, object, goal, objectives. research approach, "On protection imposed" and "scientific novelty" |
| Working with scientific literature. Working with the conceptual apparatus | Book benefits and harms .. citation, plagiarism. Information and desinformation. |
| Experimental work | performance criteria, |
| Writing the thesis | Classification structural sections of the thesis, conclusions (and informative booklet) reduction. |
| Preparations for protection | Overcurrent protection, the main issues on defense, |
| Publications on the subject of the dissertation | Primary requirements. Abstract. |

Developer:

Senior lecturer, Department of environmental monitoring and forecasting



Kapralova Daria O.

The Head of the program

Professor



Chernykch Natalia A.

ABSTRACT OF THE ACADEMIC DISCIPLINE

Educational program

05.06.01 Earth Sciences

Ecology: Modern environmental studies

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| Discipline name | Regulation of natural system quality |
| Study load | 4 credits (144 hours) |
| COURSE DESCRIPTION | |
| Course units | Outline of the course units |
| Topic 1: | Theoretical basis of assessment and modeling of natural systems sustainability. The concept of sustainability as a basis for creating models of pollution of the environment and use of natural resources. Practical examples of pollution modeling and reflected in these different aspects of the stability properties of natural-systems to anthropogenic influence. The specifics of teaching specific subjects in high school: the evaluation pressures on natural systems. |
| Topic 2: | Evolution of environmental standards, from the sanitary and hygienic standards for ecosystem evaluation. Comparative analysis of sanitary-hygienic and ecosystem approaches to rationing. Prospects of transformation normation systems. Practical examples. |
| Topic 3. | Evolution of environmental regulations, from the rules to the impact of ideas on the best available technologies. Comparative analysis of the impact of standards and valuation-on the best technologies. |
| Topic 4. | Foreign system of environmental standards: the EU quality standards of the atmosphere, hydrosphere, soil and land resources and regulation of anthropogenic-governmental influences on them. Features of the regional legislation. |
| Topic 5. | Foreign system of environmental standards: the United States and Canada experience. The specification of atmosphere, hydrosphere, soil and land resources quality and human impacts regulation. Features of the regional legislation. |
| Topic 6. | Foreign system of environmental standards: the Chinese experience. quality standards of the atmosphere, hydrosphere, soil and land resources and anthropogenic-governmental influences regulation. Features of the regional legislation. |
| Topic 7. | Rationing of tolerable risk . The concept of tolerable risk. The notion of acceptable risk-assessment as a basis for the creation of environmental quality standards, environmental impacts, environmental standards, processes and services, product standards. |
| Topic 8. | Corporate system of ecological regulation and |

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| | standardization. Practical examples of corporate environmental standards systems: the experience of Russian and foreign companies. Integrated management systems and specific environmental regulation. |
| Topic 9. | The practice of the environmental standards development in Russia. "Weaknesses" and the WHO-possibilities of improvement. The idea of standards harmonization and modern international programs. |
| Topic 10. | Modern priorities of anthropogenic load. Priority of environmental issues and the anthropogenic load on the environment reduce. Areas of environmental regulation system development. Russia's international obligations and requirements for rationing system. |

Developer:

Professor
of Applied ecology Department



Khaustov Alexander P.

Head of the program

Professor



Chernykch Natalia A.

ABSTRACT OF THE ACADEMIC DISCIPLINE

Educational programme
05.06.01 Earth Sciences
Ecology: Modern environmental studies

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| Educational programme | Russian as a Foreign Language |
| 05.06.01 Earth Sciences | 4 units (144 hours.) |
| COURSE DESCRIPTION | |
| Course units | Outline of the course units |
| Section 1. Profession-oriented reading of scientific texts in order to obtain information for scientific activities. | 1). The main types of reading scientific-oriented texts in order to prepare for research activities of graduate students: oriented and abstract, generalizing and abstract, oriented and skim reading evaluative skim-reading, studying-creating. Work with scientific texts: orientation, search, generalization of knowledge, the subject of text materials. |
| | 2). Types and genres of the main written scientific texts: application-obligation to conduct scientific research in the specialty; graduate student's individual training plan; plan-prospectus (abstract presentation of questions located in a logical sequence, on which factual material can be systematized); the card-catalogue of scientific publications (bibliographic description and analytical summary of information sources) |
| Section 2. Structural and informative features of abstract texts | 1) The structure and content of different types of secondary text: summary, synopsis, abstract, abstract review. Logical-information actions activities that must be performed during the processing of the original text in order to obtain a secondary text. |
| | 2). Oral abstract review. Computer programs for the abstract review presentations (PowerPoint, Persuasion, etc.) of the research topic. |
| Section 3. Structural & compositional construction of scientific written text fragments | Types of the semantic structure of a paragraph as a structural-compositional unit of text: - deductive (generalization with the subsequent disclosure of thought, illustration of arguments); - inductive (sets out the particular facts - the conclusion is formulated). |

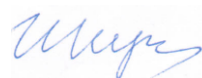
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| Section 4. The language and style of written scientific texts | Lexical and grammatical knowledge: 1. common lexis; 2. terminological lexis; 3. words - organizers of scientific idea and creativity; 4. Phraseological and established collocations for the expression of the messages logical connections and the certain concepts designation. |
| | Language / speech design of the introductory part of the problem article (the general part of the abstract). Language and speech standards - a cliché. |
| | The use of verbal mean in creating a summary of a scientific article / oral presentation is a presentation of the topic and problems of the study. Standard speech clichés, used in the introductory part, for general description of the content, argumentation of the provisions, evaluation of the author's information |

Developers:

Associate Professor of the Russian
Language Department
Academy of Engineering
Head of the Russian Language
Department
Academy of Engineering
Professor



N.G. Karapetyan



I.A. Pugachev

Ecological faculty

ANNOTATION OF THE ACADEMIC DISCIPLINE

05.06.01 Earth Sciences

Specification Ecology: Modern environmental studies

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| Course Title | Product certification according to the international environmental standards |
| Course Scope | 4 credits (144 hours) |
| COURSE SUMMARY | |
| Course units (Topics) | Course units (Topics) Outline |
| Tasks and objectives | Elements of the history of certification. Properties of products as the certification of the object. Factors shaping the consumer properties of the product. products and production processes requirements. The specifics of teaching ecological disciplines: modern methods of analysis |
| Voluntary and mandatory conformity assessment | Forms of conformity. Voluntary confirmation of compliance. Signs of conformity of voluntary certification. Mandatory confirmation of compliance. |
| Participants and certification procedure for its implementation | Certification participants. The rights and obligations of the applicant. OS functions during the compulsory certification. Reference mark on the market. Import of Russian products subject to mandatory conformity assessment and acceptance of the results of conformity assessment abroad by Russian Federation |
| Participants and certification procedure for its implementation | Certification participants. The rights and obligations of the applicant. OS functions during the compulsory certification. reference mark on the market. Import of Russian products subject to mandatory conformity assessment and acceptance of the Russian Federation the results of conformity assessment abroad. |
| Certification of quality systems ISO 9000 | The emergence of certificates of conformity for quality assurance system. Problems of standardization and certification of quality management systems. Certification of production. Certification services. |
| International standardization in the field of environmental protection | International Organization for Standardization ISO: structure, objectives, activities, modernization. ISO 14000 as the international environmental management system standard. The participation of Russia in international standardization. |
| Ecological certification | The development of ecological certification in Russia. Mandatory certification on environmental requirements. Voluntary certification. |

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| Environmental labeling | Signs of conformity. Demonstration of compliance with environmental requirements. Eco-labeling in the EU. Eco-labeling in Russia. |
| Certification of the integrated system of safety management and quality management of food products on the basis of the process approach ISO 22000: 2005 | Gaasp system in the EU. Gaasp in Russia. Development of the safety management system of food products in accordance with ISO 22000: 2005 |

Developer:
Professor, Department of System Ecology



Kalabin Cennady A.

Head of the program

05.06.01. Earth Science



Chernykch Natalia A.

Federal state autonomous educational institution of higher professional education

“People’s Friendship University of Russia”

Ecological faculty

ANNOTATION OF THE ACADEMIC DISCIPLINE

Ecology: Modern environmental studies

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| Course Title | Waste management |
| Course Scope | 4 credits (144 hours) |
| COURSE SUMMARY | |
| Course units (Topics) | Course units (Topics) Outline |
| The problem of waste. | The concept of waste. The main types of waste, their brief description of the principles of waste classification. Waste management processes (waste life cycle). Waste Management Organization: the target and the municipal program "Waste" . |
| The waste in the environment | The stability and resistance of ecosystems to pollution. Environmental hazard waste. The combined impact on the components of the environment and living organisms. Synergism, additivity, antagonism. The concept of ecosystem sustainability. Circulation of substances - the important principle of the sustainability of ecosystems. Biogeochemical cycles of carbon, hydrogen, oxygen, sulfur, phosphorus and metals. Self-cleaning ability of ecosystems: biotic and abiotic processes. ecosystem sustainability parameters. The specifics of teaching environmental subjects: Modern methods of analysis |
| Ensuring environmental safety in the handling of waste. | Documentation of the waste management activities. Modern analytical methods to ensure the control and identification of wastes. The class definition of waste toxicity. Rationing impact of waste on the environment. Classification OPS quality standards and the principles of their determination. Certification of waste. Certification of hazardous waste. Licensing of waste management activities. Medical and ecological and social aspects in the waste management system |
| Recycling, and disposal of industrial waste | Common methods of processing of non-radioactive waste. Storage in the slime and tailings. Heat treatment. Sludge processing (electroplating, oil). Features of industry recycling. Integrated waste management system. Sources and processing of radioactive waste. Features of radioactive waste disposal |
| Additional sources of solid waste | Waste effluents. Air emissions. Sources and types of pollution of the hydrosphere. Industrial, household and atmospheric discharges. Types of industrial wastewater pollution. Modern methods of waste water purification from industrial pollution. Agricultural and domestic waste water, and methods for their treatment. Gas emissions. Dry and wet cleaning methods. Methods of processing and recycling of sediments and sludge. Thermal methods. Biological methods. Methan digestion. Aerobic oxidation (composting). Vermikulation. |
| Sources and methods of waste with a high organic content processing | Major sources of wastes that contain organic matter. The specifics of processing methods. Bioenergy on waste (chemical oxidation, thermal gas generation, biological fermentation). Recycling in |

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| | agricultural industry. Biogazenergy installations. Aerobic and anaerobic methods of waste decontamination. Biocomposting. |
| Technologies of sorting and biowaste processing | MSW separation processes and systems for processing solid waste. Technological parameters of solid waste separation process Technological MSW separation scheme. Magnetic, electrodynamic and electric separation. The principles of the processes, types of separators. Aeroseparation. Types of separators. Crushing MSW. Types of grinders. Screening of MSW. Types of screens. Manual sorting. Flotation and gravity processing. Methods of MSW incineration. Energy production. Ecological aspects of combustion. Technologies of Biothermal aerobic composting. Complex processing of solid waste. Fundamentals of processing complexes. |
| Landfills | Hygienic requirements for the territory selection - the landfill location. The layout and arrangement of polygons. Processes occurring in the solid waste polygons. Recultivation security control in landfills. Landfills maintenance. Hygienic requirements to the choice of methods of disposal of industrial waste (solid, powdered, pasty). Features of water-soluble, liquid and flammable waste dumping. Preventive measures and current supervision of the landfills. landfill passport. |
| Main principles and procedures of designing industrial facilities for recycling. | Comparison and selection of the best available recycling technologies. Main features of incineration plants environmental design (WIPs). Principles of environmental impact assessment (EIA) of the enterprises for processing and recycling. Mathematical modeling of recycling and disposal of waste |

Developer

associate professor, Department of
environmental monitoring and forecasting



Kharlamova Marianne D.

Head of the program

Professor



Chernykch Natalia A.