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

Ecological Faculty

ANNOTATION OF ACADEMIC DISCIPINES

Education program
05.04.06 Ecology and nature management (Economics of natural resources management)
Title of educational program (profile/specialization)

Name of discipline	**Ecologic-economical aspects of environmental projects**
Discipline volume	3 **units (** 108 **hours)**
Discipline outline	
Name of discipline units	**Brief summary of discipline units**
1. The concept "project"	Projects. The concept of ecological design. Stages of development and implementation of the project according to Russian and international instruments**.**
2. Feasibility study of projects	Feasibility study of projects: composition feasibility studies, requirements for the content sections. Ecological substantiation of investment projects. Environmental support economic activity
3. Economic efficiency of investment projects	Methods for evaluating the economic efficiency of investment projects. Performance indicators. The concept of the sustainability of the project and its role in making investment decisions.
4. Environmental support economic activity in the pre-stage	Basic Documentation. Examination of projects and environmental feasibility studies. The concept of EIA as part of the project documentation Environmental support at the stage of construction of the facility. Impact on the environment and ecological optimization
5. Environmental support at the stage of construction of the facility	Stage of operation of facilities and elimination (completion of the project): the main types of environmental impact. Procedures and documentation of environmental support economic activity
6. Stage and operation of the process of liquidation	The risks of the enterprise and their evaluation. Project risks and their minimization and the need to consider in the analysis of the stability of investment projects. Ecological and economic risks and methods of their analysis and evaluation. Identification of risks. Risk factors. Economic characteristics of the environmental risks
7. The concept environmental risk	The risks of the enterprise and their evaluation. Project risks and their minimization and the

8. Management of risks	need to consider in the analysis of the stability of investment projects. Ecological and economic risks and methods of their analysis and evaluation. Identification of risks. Risk factors. Economic characteristics of environmental riskovRiski enterprise and their evaluation. Project risks and their minimization and the need to consider in the analysis of the stability of investment projects. Ecological and economic risks and methods of their analysis and evaluation. Identification of risks. Risk factors. Economic characteristics of the environmental risks Environmental risks and safety risks in investment projects. Management of risks. Environmental insurance. Minimization of environmental risks for sustainable operation of enterprises. Software tools for the design and management of risks. Experience of application.

Developed by:

Associate Professor of the Department of Applied Ecology _____ T.N. Ledascheva

Head of the Department of Applied Ecology _____ Redina M.M.

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

Ecological Faculty

ANNOTATION OF ACADEMIC DISCIPINES[i]

Education program
05.04.06 Ecology and nature management (Economics of natural resources management)
Title of educational program (profile/specialization)

Name of discipline	**Estimations of natural resources**
Discipline volume	**2 units (72 hours)**
Discipline outline	
Name of discipline units	**Brief summary of discipline units**
1. Introduction	Natural resources as a base of the economic systems. Classification of types of industries depending on resource demand. Economic classifications of natural resources.
2. Basic concepts of economic assessments of natural resources	Objects of evaluations. Basic approaches. Concept of multifunctional resources and multidimensional evaluations. Utility and functionality of natural resources. Evaluations based on income assessments, cost assessments, differential rent and reproduction costs.
3. Economic assessment and price of the resource	The role of price in organization of rational use of resource. Types of economic evaluations - approaches: non-market price; direct and indirect assessments.
4. Practical examples of the assessmet of natural resources.	Economic assessment of mineral resources. Land resources. Resources of biota. Forest resources. Assessment of the assimilation capacity of natural complexes

Developed by:

Head of the Department of Applied Ecology _____ Redina M.M.
Position, name of department Signature Name

Head of the Department of Applied Ecology _____ Redina M.M..
Name of department Signature Name

_____

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

Ecological Faculty

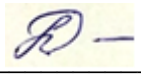
ANNOTATION OF ACADEMIC DISCIPINES

Education program
05.04.06 Ecology and nature management (Economics of natural resources management)
Title of educational program (profile/specialization)

Name of discipline	Economic aspects of nat. resources management
Discipline volume	**4 units (144 hours)**
Discipline outline	
Name of discipline units	**Brief summary of discipline units**
1. Introduction	The subject, objectives, main issues of the course. The main directions and methods of research in environmental economics
2. Environmental policies and methods of its implementation	The concept the state environmental policy and legislative support. Environmental Doctrine of the Russian Federation
3. Factors of production placement and economic development of regions	The role of the of natural conditions and natural resources in the development of society. The main factors of placement and development of production. Environmental factors of regional economies.
4. Economic aspects of the interaction of the environment and production	The environmental costs of production. External effects in environmental management. Optimum environmental pollution and ecological damage
5. Environmental management mechanisms	Environmental management mechanisms, their types and features of internalization of externalities. Theoretical foundations of economic governance. Formation of the economic mechanism of nature.
6. Paid use of natural resources	Payment for environmental management. The valuation of natural resources. Concepts and practical methods of resource assessment. Payments for pollution. Environmental taxation
7. Financing of environmental protection	Sources of funding and effectiveness of environmental protection measures. Environmental insurance. The selection of environmental measures for financing. Ecological-economic model
8. Environmental management in the enterprise	Environmental management. Organization cleaner production. Environmental accounting and reporting. Economic aspects of ecological

	standardization. Ecological-economic analysis

Developed by:

Head of the Department of Applied Ecology  Redina M.M.

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

Ecological Faculty

ANNOTATION OF ACADEMIC DISCIPINES[i]

Education program
05.04.06 Ecology and nature management (Economics of natural resources management)
Title of educational program (profile/specialization)

Name of discipline	**Environmental statistics**
Discipline volume	**3 ЗЕ (108 hours)**
Discipline outline	
Name of discipline units	**Brief summary of discipline units**
1. Introduction	Basic concepts of mathematical statistics**.**
2. Basic statistical characteristics of the sample	Determining of the dimension, mean, mode, median, standard deviation, variance, skewness, coefficient of variation using software
3. Rows and distribution	Transforming raw data into a ranked series. Interval series of distribution. Histograms and polygons of the distribution of frequency of characteristics
4. Statistical hypothesis. Testing statistical hypothesis. The statistical test.	The concept of statistical hypothesis. Null and alternative hypotheses. Type I and type II errors. Confidence probability and significance level. The critical region and areas of conjecture. Parametric and nonparametric tests.
5. Continuous monitoring and sampling. Surveillance errors	Determination of the average and maximum error of the large sample. The required sample size. The concept of a small sample. Determination of the average and marginal small sample error.
6. Variance analyses	The concept and use of analysis of variance. Univariate analysis of variance: a uniform and non-uniform.
7. Correlation and its statistical study	The concept of statistical relationship. The types and forms of relationship. Methods of studying the statistical relationship. The linear Pearson correlation coefficient. The correlation ratio. Assessment of the significance of correlation. The confidence interval for the linear correlation coefficient

8. The regression equation. The nonlinear dependence. Rank correlation coefficients	The confidence interval for the regression line for a given level of significance. The correlation ratio. Determination of the optimal form of communication
9. Time series analysis and forecasting techniques. The study and measurement of seasonality	The concept of time series. Their basic elements and types of time series. Ways of expression levels of the time series. Graphical analysis of time series. Analytical and average time series. The main trend of the time series and methods of detection. A method of moving average. Analytical alignment. Cyclical and seasonal fluctuations

Developed by:

Senior Lecturer of the Department of Applied Ecology _____ Ledascheva T.N.
Position, name of department Signature Name

The head of the Department of Applied Ecology _____ ____ Redina M.M..
Name of department Signature Name

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

Ecological Faculty

ANNOTATION OF ACADEMIC DISCIPINES[i]

Education program
05.04.06 Ecology and nature management (Economics of natural resources management)
Title of educational program (profile/specialization)

Name of discipline	Engineering ecology
Discipline volume	4 **units (** 144 **hours)**
Discipline outline	
Name of discipline units	**Brief summary of discipline units**
1. History and development of environmental management	The history of the development of the relationship of humanity with nature. Environmental problems of nature. Environmental management as the basis of modern society. Resource studies
2. Natural-industrial systems and modern management	Indicators of environmental management systems. The structure of natural and industrial systems. The basic laws of nature. Resource cycles and optima.
3. Environmental management	The concept of the system organization and environmental management principles. The object and the subject of environmental management objectives. Organizational and legal, economic and information management. Territorial organization of nature management
4. Resource studies as a basis for environmental management.	Classification of natural resources and their accounting and socio-economic assessment. Ownership of natural resources. The concept of availability of natural resources. Methods for assessing the state of natural resources and renewable. Natural resource potential and limitations of nature. Accounting and valuation of natural resources.
5. Environmental safety	The concept of safety. Methods of assessment of level of ecological danger. Awareness of risks. Sectoral indicators of environmental management. Environmental risk sectors. Sector-specific indicators of ecological safety.

Developed by:

Professor of the Department of Applied Ecology _____ A.P. Khaustov
Position, name of department Signature Name

Head of the Department of Applied Ecology _____ Redina M.M..

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

Ecological Faculty

ANNOTATION OF ACADEMIC DISCIPINES[i]

Education program
05.04.06 Ecology and nature management (Economics of natural resources management)
Title of educational program (profile/specialization)

Name of discipline	**Environmental norms and regulations**
Discipline volume	**4 units (1144 hours)**
Discipline outline	
Name of discipline units	**Brief summary of discipline units**
1. Principles of functioning of the market	The reasons for the differences in market systems. The law of supply and demand. Factors affecting the proposal, factors affecting demand. Equilibrium in the market. Deficit. Overstocking. Price elasticity of demand. Cross-elasticity. The economic paradox**.**
2. Market and competition	Price and non-price competition. Perfect and imperfect competition. Monopoly (characterization, entry barriers in the industry). Price discrimination. Oligopoly (characterization, entry barriers in the industry). Monopolistic competition. Perfect competition
3. Modern markets and their specificity	Labor market. The capital market. The land market.
4. Production and its Optimization**.**	Structure of production. External and internal environment. Factors direct and indirect effects. The costs (fixed and variable, explicit and implicit, the marginal cost). Margin Analysis (breakeven point, chain substitution). The optimal production program, taking into account the "bottleneck".
5. Revenues. Economic equilibrium	The distribution of income in society (the Lorenz curve, the Gini coefficient). General economic equilibrium. The effectiveness of the exchange (Edgeworth box)

Developed by:

Head of the Department of Applied Ecology _____ Redina M.M.
Name of department Signature Name

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

Ecological Faculty

ANNOTATION OF ACADEMIC DISCIPINES

Education program
Ecology and nature management (Economics of natural resources management)
Title of educational program (profile/specialization)

Name of discipline	**Philosophical Problems of Natural Science**
Discipline volume	**2 units (72 hours)**
Discipline outline	
Name of discipline units	**Brief summary of discipline units**
1. Philosophy, its subject and place in culture	Philosophical questions of modern life. The subject of philosophy. Philosophy as a form of spiritual culture. Main features of philosophical knowledge. Functions of philosophy
2. Historical types of philosophy. Philosophical traditions and contemporary debates.	The emergence of philosophy philosophy of the ancient world. Medieval philosophy. The philosophy of XVII-XIX centuries. Modern philosophy. Traditions of Russian philosophy
3. Philosophical ontology	Genesis as a problem of philosophy. Monistic and pluralistic concept of life. Material and ideal being. The specificity of the human being. Spatial and temporal characteristics of being. The problem of life and its finiteness and infinity, the uniqueness and plurality of the universe. The idea of development in philosophy. Being and consciousness. The problem of consciousness in philosophy. Knowledge, consciousness, self-consciousness. Nature thinking. Language and Thought.
4. Epistemology	Knowledge as a subject of philosophical analysis. The subject and object of knowledge. Cognition and creativity. The main forms of knowledge and practices. The problem of truth in philosophy and science. The variety of forms of knowledge and types of rationality. Truth evaluation value. Knowledge and practice
5. Philosophy and methodology of science	Philosophy and science. The structure of scientific knowledge. The problem of justification of scientific knowledge. Verification and falsification. The problem of

	induction. The growth of scientific knowledge and scientific method of problem. The specifics of socio-humanitarian knowledge. Positivist and postpositivist concepts in the methodology of science. The rational reconstruction of the history of science. Scientific revolutions and change of types of rationality. Freedom of scientific research and social responsibility of the scientist.
6. Social philosophy and philosophy of history	Philosophical understanding of society and its history. Society as a self-developing system. Civil society, the nation and the state. Culture and civilization. Multivariance historical development. The necessity and conscious activity of people in the historical process. The dynamics and typology of historical development. Social and political ideals and their historical destiny (the Marxist theory of class society, "open society," Karl Popper, a "free society" FA Hayek, neoliberal globalization theory) Violence and non-violence. Sources and subjects of the historical process. Basic concepts of the history of philosophy
7. Philosophical anthropology	Man and the world in contemporary philosophy. The natural (biological) and public (social) in man. Antroposotsiogenez and comprehensive. The meaning of life: death and immortality. Man, freedom, creativity. The man in the communication system: from classical ethics to the ethics of discourse. Philosophy in the field of professional activity problems

Developed by:

Professor of the department
of history of philosophy __ ___ E.N. Anikeeva

Head of the Department
of history of philosophy _____ N.S. Kirabaev
название кафедры подпись инициалы, фамилия

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

Ecological Faculty

ANNOTATION OF ACADEMIC DISCIPINES[i]

Education program
05.04.06 Ecology and nature management (Economics of natural resources management
Title of educational program (profile/specialization)

Name of discipline	**Foreign language**
Discipline volume	**3 units (108 hours)**
Discipline outline	
Name of discipline units	**Brief summary of discipline units**
1. Translation of scientific literature on the specialty.	The scientific style of scientific disciplines in Russian and foreign languages. Interference in scientific speech at translation level. Translation of scientific terms, units of measurement, formulas, graphs, proper names, geographical names, names of organizations. Ways to achieve the adequacy and equivalence in translation of scientific literature. Working with dictionaries and reference books. The use of computer technology in the translation
2. Annotate, abstracting and making reviews	Primary and secondary texts. Basics of compression of the scientific text. Convention and strategies to create secondary texts of varying degrees of compression: abstracts, annotations, analytical reviews of foreign language scientific literature on specialty.
3. Writing and presentation of scientific work in the specialty	Scientific text. The definition of a scientific text. Types of scientific texts, their structure, structuring, division into paragraphs. Stratification of vocabulary of the scientific literature. Classes of terms. Features of functioning of scientific texts in the categories of parts of speech in a foreign language compared with the Russian. Features punctuation. Communication text, expressing a sequence of thoughts, explanation, clarification or reasoning mind; adversative, restrictive relations; the total value. Unions and challenging revolutions and their respective alliances in Russian. The syntax of scientific language. Execution of written works. Rules of citation, registration of footnotes, the rules of a bibliography. The scientific message. The scientific article: Principles of writing and presentation. The research work of a master.

4. Business communication	Rules for the structure, writing and presentation. The rules of etiquette of oral business communication. Situations of oral business communication: meetings, negotiations, receiving delegations, discussions with clients, telephone conversations. Etiquette in business correspondence. Phraseology in the language of written professional business communication, speech patterns, clichés, formulas of politeness. Types of business letters, documents. Business communication by telephone

Developed by:

Разработчики:

Head of the department of foreign languages _____ Valeeva N.G.

должность, название кафедры подпись инициалы, фамилия

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

Ecological Faculty

ANNOTATION OF ACADEMIC DISCIPINES

Education program
05.04.06 Ecology and nature management (Economics of natural resources management)
Title of educational program (profile/specialization)

Name of discipline	**History and methodology of ecology and natural resources management**
Discipline volume	3 **units (**108**hours)**
Discipline outline	
Name of discipline units	**Brief summary of discipline units**
1. Introduction**.**	Sustainable development. The role of the flora and fauna. Flora and fauna as a natural resource.
2. Population and Sustainable Development	The main stages of population growth and forms of nature management, accompanied the history of mankind. The population explosion, as the current stage of the dynamics of the population. Projections and prospects.
3. The growth of the human population, the changing nature of nature management	The main reasons for the reduction of flora and fauna on the planet Earth. The growth of the human population, the changing nature of nature management, the growth of human consumption of the living resources. Narrowing the range of products consumed by humans in agriculture, forestry and fisheries, depletion cenoses created by man. Social and political reasons. Mechanisms of destruction of flora and fauna
4. Problems of sustainable use of resources**.**	Problems of sustainable resource use. Mechanisms to ensure the sustainability and effectiveness
5. Protection of habitats of plants and animals	Protection of habitats of plants and animals. Specially protected natural areas, as the most perfect form of preservation of flora and fauna at the ecosystem level. The National System of Protected Areas
6. Protection of the gene pool of plants and animals	Protection of the gene pool of plants and animals. status categories, requiring protection of species of plants and animals. The Red Book of the Russian Federation and regional red data books as a public legal document. Legislation of the Russian Federation in terms

7. Sustainable development and international cooperation	of the provisions of the regulation defined by the Red Book. Legislation of the Russian Federation with regard to the protection of flora and fauna The biosphere as a human habitat, which has no borders. International cooperation in the field of protection of flora and fauna. International cooperation as a compromise between the sovereign right of States to use natural resources and the need for joint action

Developed by:

Professor of the Department of System ecology _____ A.A. Nilolskiy

Head of the Department of System ecology _____ V.A. Grachev.

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

Ecological Faculty

ANNOTATION OF ACADEMIC DISCIPINES[i]

Education program
05.04.06 Ecology and nature management (Economics of natural resources management)
Title of educational program (profile/specialization)

Name of discipline	**Industrial safety**
Discipline volume	**4 units (144 hours)**
Discipline outline	
Name of discipline units	**Brief summary of discipline units**
1. Introduction. Industrial safety	The concept of industrial safety. Russian legislation in the field of industrial safety**.**
2. Dangerous industrial objects	The concept of hazardous production facilities (GRO), their identification, features of functioning and regulation of activities
3. Accidents, disaster, catastrophe	Submission of accidents, emergencies and catastrophic events of natural and technogenic origin. Statistics emergencies and industrial safety. Industrial accidents in different industries, their features.
4. State regulation in industrial safety.	State regulation of industrial safety. The functions and powers of state bodies.
5. The concept of the risks and dangers.	Methods of risk identification and management. Industrial safety insurance. Emergency events and investigation procedures. Software for risk analysis at hazardous production facilities.
6. Critical economy objects	Critical objects economy: identification methods and ways to ensure their functioning.
7. Planning and prevention of emergency situations	Planning and prevention of accidents on chemically hazardous objects in Russia. Planning and prevention of accidents with spills of petroleum oil. Russian and foreign experience.
8. Industrial Safety Declaration	Declaration of industrial safety of dangerous industrial objects. Examination of industrial safety
9. International cooperation	International cooperation and foreign industrial

	safety management experience

Developed by:

Head of the Department of Applied Ecology _____ Redina M.M.

Position, name of department Signature Name

Head of the Department of Applied Ecology _____ Redina M.M..

Name of department Signature Name

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

Ecological Faculty

ANNOTATION OF ACADEMIC DISCIPINES[i]

Education program
05.04.06 Ecology and nature management (Economics of natural resources management)
Title of educational program (profile/specialization)

Name of discipline	**Integrated management systems**
Discipline volume	**3 units (108 hours)**
Discipline outline	
Name of discipline units	**Brief summary of discipline units**
1. Theoretical basis of the creation of management systems in the field of occupational safety, industrial and environmental safety	The theoretical basis for the creation of management systems in the field of occupational safety, industrial and environmental safety. The idea of the Deming cycle in management**.**
2. Integrated management system of enterprises	Integrated management systems in enterprises. Compatibility of standards. Integrated application of standards and certification practices
3. The legal basis for standardization in Russia	The legal basis of standardization in Russia. Standards system in Russia and abroad. Environmental management system standards. Environmental standardization and certification in Russia.
4. Environmental Management System in accordance with ISO 14001.	Environmental Management System in accordance with ISO 14001. The basic requirements of the standard. The concept of environmental management system. implementation and adjustment procedures. The principle of continuous improvement. Domestic and foreign practice of implementation of environmental management systems.
5. Environmental audit.	Audit in the environmental management system and occupational safety and health management. The requirements of ISO 19011 to the organization and conduct environmental audits. External and internal audit.
6. Environmental performance evaluation	Environmental performance evaluation based on the requirements of the standard ISO 14031. The concept of eco-efficiency. Environmental

	performance indicators: their preparation, evaluation and use in decision-making.
7. OSH management systems	OSH Management Systems in accordance with OHSAS 18001. Policy Development. Stages of implementation of management systems. Mechanisms for implementation.
8. Energy Management Systems	Management of energy efficiency of organizations. Concept of aspects. Energy efficiency policies. Indicators of energy efficiency.
9. Integrated Management System	Experience in the implementation of integrated management systems in the field of HSE. The effectiveness of integrated management systems

Developed by:

Head of the Department of Applied Ecology _____ Redina M.M..

Name of department Signature Name

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

Ecological Faculty

ANNOTATION OF ACADEMIC DISCIPINES[i]

Education program
05.04.06 Ecology and nature management (Economics of natural resources management)
Title of educational program (profile/specialization)

Name of discipline	IT in ecology and natural resources management
Discipline volume	**3 ЗЕ (108 hours)**
Discipline outline	
Name of discipline units	**Brief summary of discipline units**
1. Introduction	Basic concepts of mathematical statistics**.**
2. Basic statistical characteristics of the sample	Determining of the dimension, mean, mode, median, standard deviation, variance, skewness, coefficient of variation using software
3. Rows and distribution	Transforming raw data into a ranked series. Interval series of distribution. Histograms and polygons of the distribution of frequency of characteristics
4. Statistical hypothesis. Testing statistical hypothesis. The statistical test.	The concept of statistical hypothesis. Null and alternative hypotheses. Type I and type II errors. Confidence probability and significance level. The critical region and areas of conjecture. Parametric and nonparametric tests.
5. Continuous monitoring and sampling. Surveillance errors	Determination of the average and maximum error of the large sample. The required sample size. The concept of a small sample. Determination of the average and marginal small sample error.
6. Variance analyses	The concept and use of analysis of variance. Univariate analysis of variance: a uniform and non-uniform.
7. Correlation and its statistical study	The concept of statistical relationship. The types and forms of relationship. Methods of

	studying the statistical relationship. The linear Pearson correlation coefficient. The correlation ratio. Assessment of the significance of correlation. The confidence interval for the linear correlation coefficient
8. The regression equation. The nonlinear dependence. Rank correlation coefficients	The confidence interval for the regression line for a given level of significance. The correlation ratio. Determination of the optimal form of communication
9. Time series analysis and forecasting techniques. The study and measurement of seasonality	The concept of time series. Their basic elements and types of time series. Ways of expression levels of the time series. Graphical analysis of time series. Analytical and average time series. The main trend of the time series and methods of detection. A method of moving average. Analytical alignment. Cyclical and seasonal fluctuations

Developed by:

Senior Lecturer of the Department of Applied Ecology _____ Chemodanova V.I.
Position, name of department Signature Name

The head of the Department of Applied Ecology _____ ____ Redina M.M..
Name of department Signature Name

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

Ecological Faculty

ANNOTATION OF ACADEMIC DISCIPINES

Education program
05.04.06 Ecology and nature management (Economics of natural resources management)
Title of educational program (profile/specialization)

Name of discipline	**Management of environmental-economic risks**
Discipline volume	**3 units (108 hours)**
Discipline outline	
Name of discipline units	**Brief summary of discipline units**
Introduction. Basic terms and definitions	1. Basic definitions and terms in the environmental risk assessment: hazard, reliability, risk
	2. Evaluation criteria of the environmental territory situation for the determining of environmental emergency zone and environmental disaster area
Anthropogenic systems and risk	3. Engineering and anthropogenic systems. Factors of anthropogenic hazard
	4. Risks created by various hazards, professional risk and individual risk. Conception and criteria of risk acceptability
	5. Population health assessment in accordance with "Evaluation criteria of the environmental territory situation for the determining of environmental emergency zone and environmental disaster area"
	6. Assessment of air condition in accordance with "Evaluation criteria of the environmental territory situation for the determining of environmental emergency zone and environmental disaster area"
	7. Assessment of water resources condition in accordance with "Evaluation criteria of the environmental territory situation for the determining of environmental emergency zone and environmental disaster area"
	8. Assessment of soil covering condition and landscapes in accordance with "Evaluation criteria of the environmental territory situation for the determining of environmental emergency zone and environmental disaster area"
Environmental illnesses	9. Assessment methods of environmental

	illnesses. Criteria of population health assessment.
	10. Influence of the environmental factors on expansion of some diseases
Assessment of hazards and risk assessment	11.Assesement of non-cancerogenic hazard and risk with reference dose
	12. Assessment of cancerogenic risk
	13. Stage 1: Identification of hazards
	14. Stage 2: Assessment of dose-response relationship. Toxic level of cancerogenic and non-cancerogenic materials
	15. Stage 3: Exposition assessment. Migration ways of toxicants from source to recipient
	16. Determination of toxicant amount, getting through organism in the influence point. Determination of substance intake in organism by oral, inhalation and dermal routes
	17. Hazard and risk assessment of chemical pollution. Risk assessment of cancer diseases
	18. Hazard assessment of influence of non-cancerogenic substances. Danger coefficient of development of non-cancerogenic effects
	19. Model of personal threshold. Types of potential risk
	20. Assessment of radiation risk and lifetime
	21. Combine of potential risk for health. Sensibilization, simple complete summation, incomplete summation, independent action, compensation
	22. Stage 4: Risk characterization. Competitive risk assessment
Use of Conception of risk assessment	23. Practical use of Conception of risk assessment. Regulatory support of hazards and risk assessment in Russia and in foreign countries

Developed by:

Assoc.Prof of the Department of Forensic Ecology  Mikhailichenko K.Yu

Head of the Department of Forensic Ecology  Chernykh N.A.

Name of department Signature Name

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

Ecological Faculty

ANNOTATION OF ACADEMIC DISCIPINES

Education program
05.04.06 Ecology and nature management (Economics of natural resources management)
Title of educational program (profile/specialization)

Name of discipline	**Management of natural resources**
Discipline volume	**2 units (72 hours)**
Discipline outline	
Name of discipline units	**Brief summary of discipline units**
1. Introduction	The subject, objectives, main issues of the course. The main directions and methods of research in environmental economics
2. Environmental policies and methods of its implementation	The concept the state environmental policy and legislative support. Environmental Doctrine of the Russian Federation
3. Factors of production placement and economic development of regions	The role of the of natural conditions and natural resources in the development of society. The main factors of placement and development of production. Environmental factors of regional economies.
4. Economic aspects of the interaction of the environment and production	The environmental costs of production. External effects in environmental management. Optimum environmental pollution and ecological damage
5. Environmental management mechanisms	Environmental management mechanisms, their types and features of internalization of externalities. Theoretical foundations of economic governance. Formation of the economic mechanism of nature.
6. Paid use of natural resources	Payment for environmental management. The valuation of natural resources. Concepts and practical methods of resource assessment. Payments for pollution. Environmental taxation
7. Financing of environmental protection	Sources of funding and effectiveness of environmental protection measures. Environmental insurance. The selection of environmental measures for financing. Ecological-economic model
8. Environmental management in the enterprise	Environmental management. Organization cleaner production. Environmental accounting and reporting. Economic aspects of ecological standardization. Ecological-economic analysis

Developed by:

Head of the Department of Applied Ecology _____ Redina M.M.

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

Ecological Faculty

ANNOTATION OF ACADEMIC DISCIPINES

Education program
05.04.06 Ecology and nature management (Economics of natural resources management)
Title of educational program (profile/specialization)

Name of discipline	**Methodology of scientific research in ecology**
Discipline volume	**2 units (72 hours)**
Discipline outline	
Name of discipline units	**Brief summary of discipline units**
1) Introduction 2) Basics of methodology of scientific creativity 3) The theory of information retrieval 4) Empirical research methods 5) Requirements for the thesis work 6) Other businesses	***1)*** Introduction to the methodology SR, basic terms and definitions, ***2)*** structure of research activities, relevance and scientific novelty, the classification of methods of scientific research, identifying of instruments and methods aimed at enhancing the experience and intuition of experts, logical laws. 3) Information search, information search on the Internet 4) empirical methods, observation, measurement, measurement scales, measurement error, the concept of the experiment, experiment planning, processing experiments, surveys, expert surveys 5) General requirements for the research work, the basics of scientific citation, the effectiveness of scientific research, the concept of plagiarism in science, discoveries, their mechanisms and typology. 6 The methodology of practice, the methodology of artistic and educational activities, the organization of collective action.)

Developed by:

Senior Lecturer of the department of environmental itoring
_____ D.O. Kapralova

Head of the Department

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

Ecological Faculty

ANNOTATION OF ACADEMIC DISCIPINES

Education program

05.04.06 Ecology and nature management (Economics of natural resources management)

Title of educational program (profile/specialization)

Name of discipline	**Modern problems ecology and nature management**
Discipline volume	**3 units (108 hours)**
Discipline outline	
Name of discipline units	**Brief summary of discipline units**
1. The dependence of man from the flora and fauna**.**	Natural resources - the main source of resources, the existence of society. The absolute dependence of man on the flora and fauna.
2. Population explosion. Causes and the consequences	The population explosion and the direct consequences of its impact on the environment of modern population and projections for the coming decades.
3. The main problems of applied ecology	The conservation of biological diversity and the sustainable use of natural resources as a major problem for Applied Ecology
4. The humanitarian aspects of the interaction between society and nature**.**	Environmental education and awareness. The impact of the environment on human health deterioration. Specificity of the effect of environmental degradation on human health. Measures for the improvement of the human environment. International cooperation and international law regarding the protection and rational use of natural resources
5. Development of the system of specially protected natural territoriy- the main instrument for the preservation of the environment at the ecosystem level	Expansion of the system of protected areas. Ecological systems in terms of increasing the influence of anthropogenic factors. Violation adaptations of plants and animals under the influence of man-made. Meaning coadaptation factors in the organization of the structure and function of ecological systems. Biocommunication role in the organization of the structure and function of ecological systems. Behavioral Ecology.

Developed by:

Professor of the Department of System ecology _____ A.A. Nilolskiy

Head of the Department of System ecology _____ V.A. Grachev.

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

Ecological Faculty

ANNOTATION OF ACADEMIC DISCIPINES[i]

Education program
05.04.06 Ecology and nature management (Economics of natural resources management)
Title of educational program (profile/specialization)

Name of discipline	**Modern technologies for nature protection**
Discipline volume	**4 units (144 hours)**
Discipline outline	
Name of discipline units	**Brief summary of discipline units**
1. Introduction	Basic principles of environmental friendly technologies and technical protection measures. The concept of quality of environment components
2. Technologies of protection of the atmosphere	Characteristics of the main sources and atmospheric pollutants, aquatic environment and soil. Environmental consequences of pollution. Atmosphere protection from industrial pollution. Characteristic physico-chemical properties and composition of dust and gases. Modern methods of protection of the atmosphere from industrial pollution: mechanical, physico-chemical, chemical
3. Technology use and protect the resources of the hydrosphere	Water. The quality of the water. Characteristics of the main methods of water treatment for industrial and drinking water supply. Sanitation. Waste water of different industries. Water bodies as receivers of sewage. The conditions of wastewater discharge into water objects and methods of forecasting of water quality, the composition of the hydrochemical work. Industry standards. Wastewater treatment. Modern methods of wastewater treatment (industrial and domestic). Tertiary treatment and disinfection. Location of treatment facilities in the production cycles, their principal. The modern system of modular type. Characterization of the types and properties of sewage sludge, facilities for processing of sewage sludge.
4. Solid waste recycling.	The concept of waste production and consumption, composition and properties of waste (MSW and industrial). Classification of waste. Ways of processing of solid waste. Landfills for disposal of solid precipitation, technological cycles and technical and(environmental-)economic characteristics of waste processing industries. Plants for processing solid waste.

5. Modern methods of restoring components of the natural environment	Remediation technology. Analysis of the effectiveness of remediation technologies.

Developed by:

Professor of the Department of Applied Ecology _____ A.P. Khaustov

Position, name of department Signature Name

Head of the Department of Applied Ecology _____ Redina M.M..

Name of department Signature Name

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

Ecological Faculty

ANNOTATION OF ACADEMIC DISCIPINES

Education program
05.04.06 Ecology and nature management (Economics of natural resources management)
Title of educational program (profile/specialization)

Name of discipline	Monitoring of environmental impacts
Discipline volume	**3 units (108 hours)**
Discipline outline	
Name of discipline units	**Brief summary of discipline units**
1. Theoretical basis and methodology of the environmental diagnosis of natural and human systems	Theoretical basis and methodology of the environmental diagnosis of natural and human systems. Classification of anthropogenic sources of pollution. Modern methods of monitoring and environmental monitoring of the state of the environment, taking into account background concentrations and the effects of pollution
2. Regulation and standardization as a basis for the development of monitoring systems	Система стандартов и нормативов качества окружающей среды, а также нормативов вредных выбросов, сбросов и токсичных отходов
3. Environmental Monitoring Technologies	Technologies for environmental monitoring as a basic tool for environmental diagnosis. System environmental monitoring and automated control systems, data collection and transmission. GIS technology
4. Environmental diagnostics of natural and human systems.	Approaches to organizing and conducting environmental diagnostic of the natural-anthropogenic systems in view of classification of the territories according to levels of technogenic loading and risk levels – urbanized areas, industrial areas, natural ecosystems and indoor environments.

Developed by:

Head of the Department of environmental monitoring _____ Kharlamova M.D.
Name of department Signature Name

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

Ecological Faculty

ANNOTATION OF ACADEMIC DISCIPINES[i]

Education program
05.04.06 Ecology and nature management (Economics of natural resources management)
Title of educational program (profile/specialization)

Name of discipline	Nat. and industrial emergency situations and accidents
Discipline volume	**5 units (180 hours)**
Discipline outline	
Name of discipline units	**Brief summary of discipline units**
1. Introduction	The concept of emergencies and disasters. Classification of emergencies by scale, by the prevailing damaging factors, by sources of emergencies. Emergency statistics.
2. Damaging factors	Damaging factors of emergency situations and their classification. The effect of damaging factors on humans, environmental objects and man-made objects.
3. Legal framework	Legal framework for security in an emergency. The legislation of the Russian Federation in the field of protection of the population and objects of the national economy in emergency situations; Government decrees, GOSTs, industry and corporate security documents in emergency situations.
4. Security system.	Security system in emergency situations in the Russian Federation. The interaction of government agencies at various levels and private enterprises. Emergency response schemes.
5. Forecasting.	Forecasting of emergency situations and their consequences. Risks of occurrence of emergencies of various nature (man-made and natural emergencies and disasters), their types and methods of assessment. Forecasting of emergencies as a result of the action of natural factors and their consequences. Energy geological and geophysical processes. The nature and sources of the largest geophysical manifestations. Predictive criteria for natural geophysical manifestations - the organization of regime observations. Features regime

	observations in the waters.
6. Forecasting man-made emergencies and disasters	Forecasting man-made emergencies and disasters. Assessment of the scale of negative consequences as a result of emergencies at chemically hazardous facilities, radiation-hazardous facilities, fire and explosive objects.
7. Liquidation of consequences of an emergency situations	Liquidation of consequences of emergency situations. Basic principles. Elimination of the consequences of chemical accidents, emergencies in case of radiation damage, emergencies accompanied by explosions and fires.
8. Features of emergencies and disasters	Features of emergencies and disasters in facilities for the extraction, transportation and processing of hydrocarbons. Consequences of emergency situations in the oil and gas complex
9. Technologies for the prevention and elimination of emergencies	Technologies for the prevention and elimination of emergencies in the oil and gas complex. Stages of emergency response. Technical means.
10. Security: planning measures for the prevention and elimination of emergencies	Security: planning measures for the prevention and elimination of emergencies. Plans for the prevention and elimination of accidental spills of oil and oil products (OSR plans). Plans for the localization and liquidation of emergency situations (PLAS). Protection of the population in emergencies. The concept of disaster medicine.

Developed by:

Head of the Department of Applied Ecology _____ Redina M.M.
Position, name of department Signature Name

Head of the Department of Applied Ecology _____ Redina M.M..
Name of department Signature Name

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

Ecological Faculty

ANNOTATION OF ACADEMIC DISCIPINES

Education program
05.04.06 Ecology and nature management (Economics of natural resources management)
Title of educational program (profile/specialization)

Name of discipline	**Standards of Environmental Management**
Discipline volume	**2 units (72 hours)**
Discipline outline	
Name of discipline units	**Brief summary of discipline units**
1. The legal basis for standardization	The legal basis for standardization. standards system in Russia and abroad. Environmental Management System standards. The history of environmental management standards. Environmental standardization and certification in the Russian Federation**.**
2. Environmental Management Systems	Environmental Management System in accordance with ISO 14001. The basic requirements of the standard standard. The concept of environmental management system. implementation and adjustment procedures. the principle of continuous improvement. Domestic and foreign practice of implementation of environmental management systems
3. Environmental audition. Eco-efficiency	Environmental audition to the environmental management system and occupational safety and health. The requirements of ISO 19011 to the organization and conduct environmental audits. External and internal audit
4. Product Lifecycle Management	Product lifecycle management based on the standards ISO 14040-14043. The concept of the life cycle of products. The basic procedures of life cycle assessment, forms of information presentation and practice of its use for management decisions

Developed by:

Head of the Department of Applied Ecology _____ Redina M.M..
Name of department Signature Name

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

Ecological Faculty

ANNOTATION OF ACADEMIC DISCIPINES

Education program
05.04.06 Ecology and nature management (Economics of natural resources management)
Title of educational program (profile/specialization)

Name of discipline	**Wastes: Landfills, Processing and Recycling**
Discipline volume	**4 units (144 hours)**
Discipline outline	
Name of discipline units	**Brief summary of discipline units**
Topic 1. The problem of waste.	Stability and safety of the environment, the concept of waste. The main types of waste, a brief description of the principles of waste classification. Processes for waste management (life cycle management). Organization of waste management. Documenting the activities of waste management. Certification of waste. Certification of hazardous waste.
Theme 2. Waste in the environment.	Stability and sustainability of ecosystems to pollution. The concept of ecosystem's stability. Cycling of matter - the important principle of sustainable ecosystems. Biogeochemical cycles of carbon, hydrogen, oxygen, sulfur, phosphorus and metals. Self-purification capacity of the ecosystem: biotic and abiotic processes. The parameters of ecosystem stability.
Theme 3. Sources of solid waste. Wastewater.	Sources and types of pollution of the hydrosphere. Types of wastewater. Types of pollution of industrial waste water. Modern methods of treatment of waste water from industrial pollution. Agricultural and domestic effluents and methods of cleaning. Sewage sludge and methods of treatment and disposal. Biological methods. Methane fermentation. Composting. Vermiculation. Thermal methods.
Theme 4. Processing, recycling and disposal of industrial waste.	Processing of non-radioactive waste. Warehousing. Heat treatment. Sludge processing (electroplating, oil). Features recycling by industry. Integrated waste management system. Sources and processing of radioactive waste. Features of radioactive waste.

Theme 5. Transportation of hazardous waste.	The main hazards during transportation. Prevention and management of emergencies involving dangerous goods. Technical and organizational measures.
Theme 6. Landfills.	Hygiene requirements for the selection of the territory - the location site. The layout and arrangement of polygons. Ensuring security control polygons. Hygienic requirements to choosing disposal of industrial waste (solid, powdered, pasty). Features dumping water soluble, liquid and combustible waste. Preventive and routine supervision of the polygons. Passport site.
Theme 7. Recycling, as recycling of secondary raw materials.	Classification of secondary raw materials. Problems of implementation of industrial waste technologies. GOST 25916-83 g "Resources tangible secondary. Terms and definitions. "Ways to prepare waste for disposal. Technology for processing waste materials.
Theme 8. Technology for processing of household waste.	Incineration of MSW. The generation of energy. Environmental aspects of combustion. Biothermal aerobic composting technology. Technology of anaerobic digestion and biogas production. Technology for the processing of plastic bottles (PETF), paper, metal, glass and bottle cullet.

Developed by:

Head of the Department
of Environmental monitoringecology ___  M.D. Kharlamova.