

First level (Bachelor's degree)

Code and name of Ukrainian specialty – 0521 Environmental sciences

EDUCATIONAL PROGRAM – Environmental safety

Department of Ecology and Plant Polymers Technology

Language of study – English

Educational offers		
Year of study/ semester	COURSE TITLE	Number of ECTS credits / semester control
2 / fall semester	Analytical Chemistry - I. Qualitative Analysis	5,0/exam
2 / spring semester	Analytical Chemistry - II. Quantitative Analysis	5,0/exam
	Meteorology and Climatology	4,0/ test
3 / fall semester		
3 / spring semester	Environmental Protection Organization and Management	4,0/ exam
	Toxicology	5,0/exam

DESCRIPTIONS OF COURSES

Environmental Protection Organization and Management	
Restrictions (specialty for which the course is offered)	<i>Environmental sciences</i>
Educational level	<i>Bachelor's degree</i>
Year of study	<i>3</i>
Number of ECTS credits	<i>6</i>
Language of study	<i>English</i>
Department	<i>Ecology and Plant Polymers Technology</i>
Assumed knowledge and prerequisites	<i>English</i>
Scope of the course	<i>The scope of the course includes theoretical foundations of management, the main directions of ecological policy of the state, international experience in environmental management.</i>
Rationale	<i>At the present stage, socio-economic development leads to increased anthropogenic impact on the environment, which reduces its ability to self-healing. In addition, there are clear signs of ecological crisis, which are manifested in the degradation of the environment. Therefore, it is important to find the optimal interaction between the environment and meet the basic needs of society. Taking into account the social, economic and environmental interests of society is ensured through the environmental policy of the state, which is implemented through the system of environmental management. The Department ensures the implementation of legislation, control over compliance with environmental safety requirements, carrying out comprehensive measures aimed at the rational use of natural resources, achieving coordination of actions of state and public bodies in the field of environmental protection.</i>
Learning outcomes	<i>Expected learning outcomes include:</i> <ul style="list-style-type: none"> – <i>knowledge of tools and mechanisms for environmental management at the local, regional, national and international levels, taking into account the program of sustainable development at all levels;</i> – <i>be able to assess the impact of basic environmental laws on management decisions;</i> – <i>to adapt international management experience in the practice of environmental activities of rational use of natural resources;</i> – <i>to define ecological problems of Ukraine and to solve them in the context of strategy of ecological policy of the state</i>
Competencies and skills	<i>Upon successful completion of the course students are expected to be able to:</i> <ul style="list-style-type: none"> – <i>Use the basic principles and composition of environmental management;</i> – <i>inform the public about the state of environmental safety and sustainable use of nature;</i> – <i>formulate requirements for personnel management and use in practice the principles of personnel selection management;</i> – <i>interact with participation in the management of environmental actions and / or environmental projects.</i>
Instructional Materials	<i>syllabus, learning materials (lecture notes, presentations, reference book)</i>
Mode of delivery	<i>lectures (seminars/workshops /tutorials)</i>
End-of-semester control	<i>Exam</i>

Inna Trus, associate professor, inna.trus.m@gmail.com

DESCRIPTIONS OF COURSES

Meteorology and Climatology	
Restrictions (specialty for which the course is offered)	<i>Environmental sciences</i>
Educational level	<i>First level (Bachelor's degree)</i>
Year of study	<i>2</i>
Number of ECTS credits	<i>4</i>
Language of study	<i>English</i>
Department	<i>Ecology and Plant Polymers Technology</i>
Assumed knowledge and prerequisites	<i>English B2</i>
Scope of the course	<i>The scope of the course includes formation of students' fullknowledge in physical, electrical and physico-chemical processes occurring in the atmosphere; learning the impact of these processes on the formation of meteorological phenomena; determination of anthropogenic effect on meteorological and climatic processes</i>
Rationale	<i>Atmospheric processes and meteorological phenomena are one of the most important environmental factors. Climate change and, as a result, catastrophic changes in the weather characteristics at different parts of our planet lead to awful destruction and human losses. Understanding the main atmospheric processes, their impact on weather and climatic characteristics is a necessary feature of the future specialist in ecology and environmental protection field.</i>
Learning outcomes	<i>Expected learning outcomes include: – ability to critically comprehend the basic theories, methods and principles of natural sciences</i>
Competencies and skills	<i>Upon successful completion of the course students are expected to be able to: – understand the basic environmental laws, rules and principles of environmental protection and nature management; – understand the basic concepts, theoretical and practical problems of natural sciences, which are necessary for analysis and decision-making in the ecology, environmental protection and rational nature management fields; – to improve the professional level by further education and self-education</i>
Instructional Materials	<i>syllabus, learning materials, presentations</i>
Mode of delivery	<i>lectures and seminars</i>
End-of-semester control	<i>Test</i>

Yaroslav Radovenchik, associate professor, r.yar@ukr.net

DESCRIPTIONS OF COURSES

Toxicology	
Restrictions (specialty for which the course is offered)	<i>Environmental sciences</i>
Educational level	<i>First level (Bachelor's degree)</i>
Year of study	3
Number of ECTS credits	5
Language of study	English
Department	<i>Ecology and Plant Polymers Technology</i>
Assumed knowledge and prerequisites	<i>Toxicology course studying based on knowledge of biology, general ecology, inorganic, organic and analytical chemistry</i>
Scope of the course	<i>The main directions of toxicology, peculiarities of the various environment pollutants influence on living organisms and ecosystems as a whole</i>
Rationale	<i>Understanding the basics of toxicology becomes especially important for the period of intensification of anthropogenic pollution, because it allows you to manage environmental risks, avoid dangerous situations and poisonings. Toxicology provides critically important information and knowledge that can be used to make the balanced decisions about personal safety, homeostasis of natural ecosystems and to promote the concept of sustainable development in a global scale</i>
Learning outcomes	<i>To find out the impact of certain groups of pollutants on living organisms, to master the methods of toxicological calculations and to learn to assess the degree of toxicological risk.</i>
Competencies and skills	<i>After mastering the "Toxicology" discipline students will acquire competencies:</i> <ul style="list-style-type: none"> – <i>tracking the movement of xenobiotics in ecosystems along trophic chains;</i> – <i>assessment the toxicity degree of various substances and media;</i> – <i>determination of the class of toxicity and danger of chemical pollutants according to the parameters of toxicometry.</i>
Instructional Materials	<i>A course of lectures that can be taught remotely</i>
Mode of delivery	<i>Lectures, practical and laboratory classes</i>
End-of-semester control	<i>Exam</i>

Valeriya Vember, associate professor, vvember@gmail.com

DESCRIPTIONS OF COURSES

Analytical Chemistry - I. Qualitative Analysis	
Restrictions (specialty for which the course is offered)	<i>Environmental sciences</i>
Educational level	<i>First level (Bachelor's degree)</i>
Year of study	<i>2</i>
Number of ECTS credits	<i>5</i>
Language of study	<i>English</i>
Department	<i>Ecology and Plant Polymers Technology</i>
Assumed knowledge and prerequisites	<i>English B2, Completion of educational component "Inorganic Chemistry", "Physics", "Mathematics"</i>
Scope of the course	<p><i>The scope of the course includes</i></p> <ul style="list-style-type: none"> <i>– basic laws of chemistry used in analytical chemistry;</i> <i>– logical connection between methods of analytical chemistry and chemical properties of molecules and ions;</i> <i>– general provisions of the basics of chemical methods of analysis;</i> <i>–extensive laboratory practice in qualitative chemical analysis of kations and anions.</i>
Rationale	<i>The educational component contributes to the development of professional expertise in principles and methods of chemical analysis, promoting the achievement of a more in-depth understanding of chemical processes and the laws of their course.</i>
Learning outcomes	<p><i>Expected learning outcomes include:</i></p> <ul style="list-style-type: none"> <i>– study of theoretical bases of chemical methods of analysis in the control of human objects and the environment;</i> <i>– scientific substantiation of general approaches in the selection and development of methods for determining the chemical composition of substances, their concentration, separation and identification.</i>
Competencies and skills	<p><i>Upon successful completion of the course students are expected to be able to:</i></p> <ul style="list-style-type: none"> <i>– prepare necessary materials and reagents for analysis;</i> <i>– perform qualitative analysis of simple objects of man-made and natural origin;</i> <i>– perform calculations of analysis results.</i>
Instructional Materials	<i>syllabus, learning materials (textbook, reference book)</i>
Mode of delivery	<i>lectures, laboratory practices</i>
End-of-semester control	<i>Exam</i>

Oleksandr Khokhotva, associate professor, khokhotva@bigmir.net

DESCRIPTIONS OF COURSES

Analytical Chemistry - II. Quantitative Analysis	
Restrictions (specialty for which the course is offered)	<i>Environmental sciences</i>
Educational level	<i>First level (Bachelor's degree)</i>
Year of study	<i>2</i>
Number of ECTS credits	<i>5</i>
Language of study	<i>English</i>
Department	<i>Ecology and Plant Polymers Technology</i>
Assumed knowledge and prerequisites	<i>English B2, Completion of educational component "Inorganic Chemistry", "Physics", "Mathematics"</i>
Scope of the course	<p><i>The scope of the course includes</i></p> <ul style="list-style-type: none"> <i>– the theoretical foundations and practical skill in quantitative (gravimetric, titrimetric) chemical analysis;</i> <i>– acquaintance with the rules of work with chemical utensils and analytical scales;</i> <i>– study of preparation methods of compounds for analysis;</i> <i>– the basic principles of analytical research;</i> <i>– study of methods of analytical evaluation of analysis results.</i>
Rationale	<i>The educational component contributes to the development of professional expertise in the theoretical foundations of quantitative chemical analysis and mastering the practical skills of its implementation. The students will learn the theoretical basis of modern analytical chemistry, the main stages of analytical research, the features of different methods for determining chemical ingredients in the environment.</i>
Learning outcomes	<p><i>Expected learning outcomes include:</i></p> <ul style="list-style-type: none"> <i>– to run qualitative control in solving of environmental problems;</i> <i>– to perform quantitative analysis of simple objects of man-made and natural origin;</i> <i>– the ability to work with laboratory equipment.</i>
Competencies and skills	<p><i>Upon successful completion of the course students are expected to be able to:</i></p> <ul style="list-style-type: none"> <i>– to perform quantitative analysis of simple objects of man-made and natural origin;</i> <i>– to perform calculations of the composition of the system, the amount of substance of the reacting compounds for the development of technological processes</i> <i>– the ability to work with laboratory equipment</i> <i>– using the theoretical provisions of analytical chemistry and reference data, calculate the necessary parameters (masses of substances, volumes of solutions, concentrations of components) for preparation of working solutions (titrants, buffers, indicators) for the purpose of their standardization;</i> <i>– to evaluate the possibilities of analysis methods and reasonably choose a method for a specific practical analysis;</i>
Instructional Materials	<i>syllabus, learning materials (textbook, reference book)</i>
Mode of delivery	<i>lectures, laboratory practices</i>
End-of-semester control	<i>Exam</i>