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MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
National Aviation University
Educational and Research Humanities Institute
Foreign Languages and Applied Linguistics Department

APPROVED
Acting Rector

_____
"___" _____ 2017

Quality Management System

SYLLABUS

on

"English for Specific Purpose"

Field of study: 16 «Chemical and Bioengineering»
Speciality: 162 «Biotechnology and Bioengineering»
Specialization: «Pharmaceutical Biotechnology»
«Environmental Biotechnology and Bioenergetics»

Year of Study – 2nd, 3rd

Semester – 3rd, 4th, 5th, 6th

Classroom Sessions – 136
Self-study – 104
Total (hours/ ECTS credits) – 240/8

Graded Test – 3rd, 4th, 5th, 6th semester

Index CB-5-162/16-3.1

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The Syllabus on "English for Specific Purpose" is based on the educational and professional program and Bachelor Curriculum № CB-5-162/16 for Speciality 162 "Biotechnology and Bioengineering" and Specialization "Pharmaceutical Biotechnology", "Environmental Biotechnology and Bioenergetics" and correspondent normative documents.

Developed by
Associate Professor
of the Foreign Languages
and Applied Linguistics Department _____ S. Kharytska

Discussed and approved by the Foreign Languages and Applied Linguistics Department, Minutes № ____ of "____" _____ 2017.

Head of the Department _____ O. Shostak

Discussed and approved by the Graduate Department for the Speciality 162 "Chemical and Bioengineering" and Specialization "Pharmaceutical Biotechnology", "Environmental Biotechnology and Bioenergetics" – Department for Biotechnology, Minutes № ___ of "___"_____2017.

Head of the Department _____ K.Garkava

Discussed and approved by the Scientific-Methodological-Editorial Board of the Educational and Research Humanities Institute, Minutes № ___ of "___"____2017.

Head of SMEB _____ S. Yahodzinskyi

"Agreed"
Director of ER HI

_____ A. Gudmanian
"____" _____ 2017.

Director of the Center
of Advanced Technologies

_____ V. Kazak
"_____" _____ 2017.

Document level – 3b
The planned term between the revisions – 1 year
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1. EXPLANATORY NOTES

The Syllabus on the subject "Foreign Language for Specific Purpose" is developed on the basis of "Methodical instructions for development and preparation of a syllabus and a course training program of subjects" adopted on 16.06.2015 by №37/order.

Teaching English is of great importance in the higher educational system of Ukraine. Being directed on communication and linked with social and special subjects the subject "Foreign Language for Specific Purpose" makes significant contribution into the education of young people.

Learning profession-oriented foreign language is an integral part of students' preparing for the transition from learning a foreign language as a subject to its practical use for the professional purpose.

The objective of teaching "Foreign Language for Specific Purpose" for students of the speciality 162 "Biotechnology and Bioengineering" is step-by-step formation of the main components of students' professional foreign language competence, namely:

• *linguistic competence*: development and improvement of basic knowledge of the phonetic, lexical, grammatical and spelling system of a foreign language and the ability to apply them skillfully in the production of their own utterances;

• *communicative competence*: improvement of speaking skills (monologue and dialogue speech), listening, reading and writing (writing of different types of written assignments to the topics of modules); the ability to use the linguistic material to achieve communicative, informative, cognitive and other goals;

• *sociolinguistic competence*: the ability to understand, choose and use language forms that are in line with the context of foreign communication, and transform them according to the needs;

• *sociocultural competence*: knowledge of the peculiarities of foreign-language professional communication in the field of construction, development of the ability to build the speech behaviour in accordance with the sociocultural specific character of the country the language of which students study;

• *strategic competence*: the ability to participate in foreign language communication, choosing the proper strategy of discourse, as well as an adequate strategy for improving the effectiveness of this communication;

• *professional competence*: the ability to set and solve applied professional tasks by means of a foreign language according to up-to-date professional requirements; the ability to continuous self-education and self-development.

The tasks of mastering the subject are the following:

– to learn professional terminology and everyday English words;

– to be able to comprehend the content of the original scientific texts and profession-oriented technical texts, obtain the necessary information from them, interpret and translate in the process of learning;

– to understand recorded and live foreign speech;

– to be able to communicate within the learnt topic in the form of monologue, dialogue and polylogue speech.

After studying the subject "Foreign Language for Specific Purpose" the student has to:

Know:

– basic professional terminology;
– main grammar and lexical features of translation of technical literature;
– main rules of handling scientific and technical literature;
– word-building morphemes and models, particularly in the area of terminology building;
– main grammar structures, correlation of their forms and meanings;
– linguistic clichés typical for scientific and technical literature.

Be able:

– to read and comprehend the authentic literature, including literature on the specialty, to obtain the necessary information;
– to participate in discussion;
– to understand oral speech on the basis of the learnt material;
– to make reports on professional and social and political topics and the topics defined by this syllabus;
– to render information obtained while reading both in foreign and native languages (in oral and written forms);
– to analyze grammar structures and correlate their forms and their meanings while reading and translating texts.

The teaching material of the subject is structured in a modular manner and consists of four training modules, including:

– training **module №1 "Humanity in the environment. From biology to biotechnology",**
– training **module №2 "Microbiology",**
– training **module №3 "Biochemistry. Biophysics",**
– training **module №4 "Genetic engineering, its application"**, which are logically complete, relatively independent, integral part of the curriculum, learning of which provides for the module test and the analysis of its implementation.

The subject "Foreign Language for Specific Purpose" is based on the knowledge of the following subjects: "Foreign Language", "Basics of Immunology", "Environmental Immunology", "Immunology", "Basics of Pharmacognosy and Technologies of Functional Drugs", "Microbiology of Biological Agents", "Fundamentals of Bioenergetics", "Environmental Chemistry", "Biotechnology of Water Treatment", "Biophysics".

2. SUBJECT CONTENT

2.1. Module №1 "Humanity in the environment. From biology to biotechnology".

Topic 2.1.1. Ecology and ecosystems.

The concept of ecology and its origin. Field of study of ecology. Ecosystems and their classification. Biotic and abiotic components of the ecosystem. Types of living organisms: Producers, Consumers, Reducers..

Topic 2.1.2. Global ecosystem.

The concept of a global ecosystem. The origin and development of life on Earth. The first forms of life. Photosynthesis. Terrestrial and aquatic ecosystems.

Topic 2.1.3. Biosphere.

Biosphere as a global ecosystem. Ecology as a science. Ecology as a science. The main goals of modern ecology.

Topic 2.1.4. Noosphere

The concept of the biosphere and the doctrine of VI Vernadsky Migration of chemical elements in the biosphere.

Topic 2.1.5. Methods of protection of the biosphere.

Modern approaches to environmental protection. Alternative sources.

Topic 2.1.6. The population of the Earth.

Rational use of natural resources. Problems of overpopulation of the Earth. Survival problems. Demographic pollution.

Topic 2.1.7. Migration.

Migration waves, their impact on the environment. Overcrowding as a cause of migration. Other reasons.

Topic 2.1.8. Nature and Society.

Use of non-renewable natural resources. Purposeful interaction of all countries of the world: coordinated development plans for solving global environmental problems.

Topic 2.1.9. Man and the environment.

Human progress: intensive research on nuclear and solar energy, space exploration. Modern environmental research.

Topic 2.1.10. Impact of human activity on the environment.

Transforming the uncontrolled influence of a man on purposeful interaction with nature. Ways of compensating for harmful human activities.

Topic 2.1.11. Alternative fuel sources.

Electricity and solar energy as alternative sources of fuel. New developments in the field of fuel.

Topic 2.1.12. Waste. Their processing.

The problem of contamination of the planet with debris covering enormous areas, destroying the flora and fauna of the planet.

Topic 2.1.13. Different types of environmental pollution.

Impact of human pollution, fauna and flora. Sources of pollution and ways to solve the problem.

Topic 2.1.14. Census.

The importance of the population census for planning measures for the preservation of the environment. Interconnection of overpopulation and pollution.

Topic 2.1.15. Ukraine: Problems and Solutions.

Ecological problems of Ukraine. Ways of solving and overcoming them.

2.2. Module № 2 "Microbiology".

Topic 2.2.1. General Biology.

The term "biology" and its origin. Biology as a science and the subject of its study. The emergence of biology as a science, its development and formation. Biology of the present. Significant discoveries in biology.

Topic 2.2.2. Classification in Biology.

Methods of research in biology. Different approaches to the study of living organisms: botany, zoology, morphology, physiology, biology of organisms, ornithology, ichthyology, etc.

Topic 2.2.3. History of Biology.

The emergence of biology as a science, its development and formation. Biology of the present. Significant discoveries in biology.

Topic 2.2.4. Molecular Biology.

Molecular biology as a science, subject and methods of its research. DNA and RNA.

Topic 2.2.5. Cells. Tissues.

The term "cell" and its origin. The appearance of a microscope. Single-celled and multicellular organisms. Cell structure. Classification of cells. The concept of fabric. System "cells - tissues - organs - systems".

Тема 2.2.6. Cytology. Embryology.

General concepts of cytology and embryology as a science..

Тема 2.2.7. Microbes.

The term "microbial", its meaning and origin. Characteristic features of microorganisms, their classification. Microbial pathogens and ways to fight them.

Topic 2.2.8. Food.

The human food process. Chemical changes in the body. The concept of metabolism. Anabolism. Catabolism. The process of digestion. Proteins, fats and carbohydrates.

Topic 2.2.9. Metabolism.

Explanation of metabolic processes. Influence.

Topic 2.2.10. Biotechnology.

Biotechnology as a science. Biotechnology research subject.

Topic 2.2.11. Biotechnological systems.

Connections of biotechnology with the food industry, waste recycling, medicine, mining. Application of biotechnology: genetic engineering, DNA technology. Biotechnology and Medicine. Biotechnology and food industry development in different countries of the world

Topic 2.2.12. Biotechnology and food industry.

Biotechnology as an integral part of the modern food industry. Advantages and disadvantages of the application of the latest technology.

Topic 2.2.13. Medical application of biotechnology.

Biotechnological groups. Ukrainian biotechnological groups. Production of medicines. Creating laser technology.

Topic 2.2.14. Modern biotechnology. Laboratory analysis.

Application of modern biotechnological methods. Work of biochemical laboratories.

Topic 2.2.15. Business and biotechnology novelties.

2.3. Module № 3 "Biochemistry. Biophysics".

Topic 2.3.1. Related Science. Organic and Inorganic Chemistry.

Chemistry as a science. Organic and inorganic chemistry, subjects and methods of research of these disciplines. Their role and meaning for humanity.

Topic 2.3.2. Biochemistry.

Biochemistry as a science. Biochemistry - the chemistry of life. Subject and methods of biochemistry research. and becoming.

Topic 2.3.3. History of biochemistry.

The emergence of biochemistry as a science. Known Discoveries in Biochemistry: DNA Structure, Bacterial Infections and Antibiotics .

Topic 2.3.4. Migration of chemical elements in the biosphere.

Explanation of migration of chemical elements in the biosphere from the point of view of biochemistry.

Topic 2.3.5. Biophysics

Biophysics as a science The emergence and formation of biophysics as a science. Known discoveries in biophysics: DNA structure, virus genetics, etc.

Topic 2.3.6. History of biophysics.

The emergence of biophysics as a science, scholars, contributing to the distinction of the structure of this science.

Topic 2.3.7. Physico-chemical methods of analysis.

Subject and methods of research in biophysics. Molecular structures, biophysical techniques, biophysical mechanisms.

Topic 2.3.8. New perspectives on the development of biochemistry.

Biochemistry today. Different aspects of biochemistry research: clinical biochemistry, physical biochemistry, neurochemistry, immunochemistry, bioorganic chemistry, etc.

Topic 2.3.9. Interconnection of biochemistry with other disciplines.

Biochemistry and immunology; biochemistry and molecular biology; biochemistry and medicine, etc.

Topic 2.3.10. Interconnection of biophysics with other disciplines.

Related Science. Basic concepts. The need to study the whole complex of disciplines for a complete understanding.

Topic 2.3.11. World achievements in biochemistry.

Application of biochemistry research methods in world science.

Topic 2.3.12. World achievements in biophysics.

The application of biophysics research methods in world science.

Topic 2.3.13. Ukraine's place in modern research in biochemistry and biophysics.

Participation of Ukraine in international projects. Young Scientists. Government work on training specialists

Topic 2.3.14. World Leaders in Biochemistry and Biophysics.

Leading leaders in the field of biochemistry and biophysics.

Topic 2.3.15. Nobel laureates.

Achievements and rewards. Whose names are listed as Nobel laureates in biochemistry and biophysics

2.4. Module № 4 "Genetic engineering, its application".

Topic 2.4.1. Genetic engineering, origin.

The origin of the term "genetic engineering". Gene engineering as a science of the present. Subject of study and research methods of science. Application

Topic 2.4.2. Genetic engineering and its practical application.

Gene engineering as a science. The formation of young science. Significant discoveries in the field of genetic engineering. Practical application and development prospects.

Topic 2.4.3. Stem cells

Different aspects of stem cell research. Their use in medicine. The role of stem cells in the harmonious development of man.

Topic 2.4.4. Immunology.

Immunology as a science. The role of the immune system.

Topic 2.4.5. Immune system of man.

What is included in the human immune system. How to strengthen immunity.

Topic 2.4.6. Virology.

Virology as a science. The notion of viruses. Prevention.

Topic 2.4.7. AIDS.

Disease of the twentieth century. Immense fears of the disease. Ways of transmission and how to prevent infection and spread. Work with HIV-infected patients. Society and disease

Topic 2.4.8. Genetically modified foods.

Genetically modified organisms: advantages and disadvantages. Genes and genomes. Application of genetically modified organisms in medicine. Achievements of microbiologists in medicine.

Topic 2.4.9. GMOs and their effects on the human body.

Ways of getting GMOs and their effects on the human body. Application of genetically modified organisms in medicine. Achievements of microbiologists in medicine.

Topic 2.4.10. Changing the DNA structure.

DNA Structure and Genetic Codes. Effect of genetically modified organisms on DNA structure. DNA molecule - a recipe for life. DNA recombination. Genetic manipulations. Molecular Genetics. History of molecular biology.

Topic 2.4.11. Modern technologies of the food industry.

Modern production technology. Food industry and the possibilities of using GMOs.

Topic 2.4.12. Agricultural technology.

Basic application of microbiology in industry. Genetic biotechnology in agriculture. Adoption of biotech food without fear.

Topic 2.4.13. Modern legislation on the use of genetically modified organisms.

Mutations GMOs and their use in the food industry. Legislation on the use of GMOs in different countries. GMO in Ukraine. Animal cloning.

Topic 2.4.14. Healthy Lifestyle.

Gene engineering and health. Healthy lifestyle and / or medicine. Production of antibiotics by fermentation.

Topic 2.4.15. Business and the environment. Production standards.

Unknowing against progress. Ethics. Economics - Politics and the environment. Challenges to public policy. State standards of production and technical conditions of production. Production legislation. For Ukraine free from GMOs!

Topic 2.4.16. Prospects for the development of genetic engineering.

Cloning Problems. Gene engineering and medical application of its achievements. Stem cells in medicine. New approaches to the study of biotechnology. Biotechnology as a universal specialist, combining knowledge from many industries.

3. LIST OF REFERENCES

3.1. Basic Literature

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3.1.2. Снопченко В.І. Biolody. Biotechnology. Посібник. – К.:НАУ, 2004 – 100 с.

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3.2. Additional Literature

3.2.1. Голіцинський Ю. Граматика. Збірник вправ. – К., 2004.
3.2.2. Коваленко О.О., Конопляник Л.М. Англійська мова: Метод. розробка для студентів 1 курсу всіх спеціальностей ІЕД. – К.: НАУ, 2003.
3.2.3. Учитесь читать литературу по специальности: Пособие по немецкому языку для студентов авиационных специальностей. Составители: Е.Н. Дубнова-Кольварская, А.М.Филимонов, Р.И. Котов и др. – М.: Высш. шк. 1986. – 112с.
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3.2.6. Німецька мова для студентів технічних спеціальностей. Навчальний посібник. Київ, Видавництво «НАУ-друк», 2009. – 104 с.
3.2.7. Коржавин А.В. Практический курс французского языка для технических вузов. М: Высш. школа, 2008. – 372 с.
3.2.8. Гак В.Г., Ганшина К.А. Новый французско-русский словарь. – М.: Русский язик-Медиа, 2008. – 1160 с.

(Ф 03.02 – 01)

АРКУШ ПОШИРЕННЯ ДОКУМЕНТА

№ прим.	Куди передано (підрозділ)	Дата видачі	П.І.Б. отримувача	Підпис отримувача	Примітки

(Ф 03.02 – 02)

АРКУШ ОЗНАЙОМЛЕННЯ З ДОКУМЕНТОМ

№ пор.	Прізвище ім'я по-батькові	Підпис ознайомленої особи	Дата ознайом-лення	Примітки

(Ф 03.02 – 04)

АРКУШ РЕЄСТРАЦІЇ РЕВІЗІЇ

№ пор.	Прізвище ім'я по-батькові	Дата ревізії	Підпис	Висновок щодо адекватності

(Ф 03.02 – 03)

АРКУШ ОБЛІКУ ЗМІН

№ змі-ни	№ листа (сторінки)				Підпис особи, яка внесла	Дата внесен-ня зміни	Дата введен-ня зміни
	Зміненого	Заміненого	Нового	Анульо-ваного			

(Ф 03.02 – 32)

УЗГОДЖЕННЯ ЗМІН

	Підпис	Ініціали, прізвище	Посада	Дата
Розробник				
Узгоджено				
Узгоджено				
Узгоджено				