

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
“Foreign Language”


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

Year of Study – 1st Semester – 1st, 2nd

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|-------------------------------------|------|-------------|----------------------------|
| Classroom Sessions | – 68 | Graded Test | – 1 st semester |
| Self-study | – 52 | Examination | – 2 nd semester |
| Total (hours/ ECTS credits) – 120/4 | | | |

Index CB-5-162/16-1.4

QMS NAU S 12.01.04 – 01-2017

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The Syllabus on “Foreign Language” 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.

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

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of Advanced Technologies


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“ ____ ” _____ 2017.

Document level – 3b

The planned term between the revisions – 1 year

Master copy

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1. EXPLANATORY NOTES

The Syllabus on the subject “Foreign Language” 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” 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. Practical skills in the foreign language enable students to be aware of world standards and literature in order to make the independent professional decision.

The objective of teaching “Foreign Language” is the formation of students’ professional language competence that will facilitate their effective functioning in the cultural diversity of educational and professional environment. The main purpose of studying “Foreign Language” by the students of the speciality 162 “Biotechnology and Bioengineering” is to obtain practical skills in the foreign language. These skills must be acquired on the basis of learning profession-oriented topics defined by this syllabus.

The tasks of mastering the subject are the following:

- to learn professional terminology and everyday English words;
- to be able to read and make oral/written translation of authentic scientific and technical texts on specialty;
- to understand recorded and live foreign speech;
- to be able to communicate within the learnt topic.


After studying the subject “Foreign Language” 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;

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- 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 two training modules, including:

- training **module №1 “Ecology and Ecosystems. Biosphere. Humanity in the environment. Biology. Microbiology. Biotechnology”**
- training **module №2 “Biochemistry. Biophysics. Genetic engineering”**, 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” is based on the knowledge of the following subjects: “Ukrainian Language”, “Higher Mathematics”, “Physics”, “Chemistry”, “Cell Biology”, “Human Physiology and Ecology”, “General Microbiology and Virology” and others.

2. SUBJECT CONTENT

2.1. Module №1 “Ecology and Ecosystems. Biosphere. Humanity in the environment. Biology. Microbiology. Biotechnology”

Topic 2.1.1. Education in Ukraine.

The system of general and higher education in Ukraine. Testing and admission rules to higher education institutions. Types of Higher Educational Institutions of Ukraine. Technical Higher Education Institutions: Directions of Training.

Topic 2.1.2. National Aviation University. History of the University.

National Aviation University as the leading higher educational institution of Ukraine. Areas of training of specialists. University structure: institutes. History of the University.

Topic 2.1.3. Education in UK and USA.


General and Higher Education Systems in the United Kingdom and the United States. Kinds of higher educational institutions of both countries. Similarities and differences between higher education of these countries and Ukraine.

Topic 2.1.4. Ecology and ecosystems. Global ecosystem.

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.

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 2.1.5. Biosphere. Methods of protection of the biosphere.

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Biosphere as a global ecosystem. The concept of the biosphere and the doctrine VI Vernadsky Migration of chemical elements in the biosphere. Ecology as a science. Ecology as a science. The main goals of modern ecology. Noosphere

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. 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 2.1.8. Man and the environment. Impact of human activity on the environment.

Human progress: intensive research on nuclear and solar energy, space exploration. Modern environmental research. Transforming the uncontrolled influence of man on purposeful interaction with nature. Ways of compensating for harmful human activities.

Topic 2.1.9. Different types of environmental pollution. Preparation of training projects.

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

Topic 2.1.10. General Biology. Classification in biology. History of Biology.

The term "biology" and its origin. Biology as a science and the subject of its study. Methods of research in biology. Different approaches to the study of living organisms: botany, zoology, morphology, physiology, biology of organisms, ornithology, ichthyology, etc. The emergence of biology as a science, its development and formation. Biology of the present. Significant discoveries in biology.

Topic 2.1.11. Molecular Biology. Cells. Tissues.

Molecular biology as a science, subject and methods of its research. DNA and RNA. The term "cell" and its origin. The appearance of a microscope. Single-celled and multicellular organisms. Cell structure. Classification of cells. The concept of tissue. System "cells - tissues - organs - systems".

Topic 2.1.12. Cytology. Embryology. Microbes.

General concepts of cytology and embryology as a science.


The term "microbial", its meaning and origin. Characteristic features of microorganisms, their classification. Microbial pathogens and paths of struggle

Topic 2.1.13. Food. Metabolism.

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

Topic 2.1.14. Biotechnology. Biotechnological systems.

Biotechnology as a science. Biotechnology research subject. Connections of biotechnology with the food industry, waste recycling, medicine, mining. Application

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of biotechnology: genetic engineering, DNA technology. Biotechnology and Medicine. Biotechnology and food industry development in different countries of the world.

Topic 2.1.15. Medical application of biotechnology.

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

Topic 2.1.16. Modern biotechnology. Laboratory analysis.

Application of modern biotechnological methods. Work of biochemical laboratories.

2.2. Module № 2 “Biochemistry. Biophysics. Genetic engineering”.

Topic 2.2.1. 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 2.2.2. Biochemistry. History of biochemistry.

Biochemistry as a science. Biochemistry - the chemistry of life. Subject and methods of biochemistry research. The emergence and formation of biochemistry as a science. Known discoveries in biochemistry: DNA Structure, bacterial infections and antibiotics.

Topic 2.2.3. Biophysics. Physico-chemical methods of analysis.

Biophysics as a science. Subject and methods of research in biophysics. Molecular structures, biophysical techniques, biophysical mechanisms. The emergence and formation of biophysics as a science. Known discoveries in biophysics: DNA structure, virus genetics, etc.

Topic 2.2.4. Prospects for the development of biochemistry. Relationship of biochemistry with other disciplines.

Biochemistry today. Different aspects of biochemistry research: clinical biochemistry, physical biochemistry, neurochemistry, immunochemistry, bioorganic chemistry, etc. Biochemistry and immunology; biochemistry and molecular biology; biochemistry and medicine, etc.

Topic 2.2.5. Genetic engineering, its practical application.

The origin of the term "genetic engineering". Gene engineering as a science of the present. Subject of study and research methods of science. Application. Gene engineering as a science. The formation of young science. Prominent discoveries in the field of genetic engineering. Practical application and development prospects.


Topic 2.2.6. Stem cells.

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

Topic 2.2.7. Immune system of man. Immunology.

Immunology as a science. The role of the immune system. What is included in the human immune system. How to strengthen immunity.

Topic 2.2.8. AIDS. Virology.

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

Topic 2.2.9. Genetically modified foods. GMOs and their effects on the human body.

Genetically modified organisms: advantages and disadvantages. Genes and genomes. DNA Structure and Genetic Codes. Ways of getting GMOs and their effects on the human body. Application of genetically modified organisms in medicine. Achievements of microbiologists in medicine.

Topic 2.2.10. Modern technologies of the food industry.

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

Topic 2.2.11. Agricultural technology.

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

Topic 2.2.12. 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 2.2.13. Ethical and moral problems of modern science.

DNA molecule - a recipe for life. DNA recombination. Genetic manipulations. Molecular Genetics. History of molecular biology.

Topic 2.2.14. Healthy Lifestyle.


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

Topic 2.2.15. 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 is free of GMOs

Topic 2.2.16. 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.

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3. LIST OF REFERENCES

3.1. Basic Literature

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- 3.1.2. Снопченко В.І. Biology. Biotechnology. Посібник. – К.:НАУ, 2004 – 100 с.
- 3.1.3. Снопченко В.І. Biosphere. Man and Environment. Посібник.– К.:НАУ, 2005 – 106 с.
- 3.1.4. Снопченко В.І., Чугуй В.О. Biochemistry. Biophysics. Посібник. К.:НАУ, 2008. – 110 с.
- 3.1.5. Снопченко В.І. Genetic Engineering. Посібник. К.:НАУ, 2009. – 104 с.

3.2. Additional Literature

- 3.2.1 Голіцинський Ю. Граматика. Збірник вправ. – К., 2004.
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- 3.2.5. Романенко Е.Н., Ситникова А.В. Метод. указания и задания по грамматике для студ. 1-2 курсов всех специальностей. – К.: НАУ, 1996. – 40 с.

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УЗГОДЖЕННЯ ЗМІН

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