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 – 2\textsuperscript{nd}, 3\textsuperscript{rd} Semester – 3\textsuperscript{rd}, 4\textsuperscript{th}, 5\textsuperscript{th}, 6\textsuperscript{th}
Classroom Sessions – 136 Graded Test – 3\textsuperscript{rd}, 4\textsuperscript{th}, 5\textsuperscript{th}, 6\textsuperscript{th} semester
Self-study – 104
Total (hours/ ECTS credits) – 240/8

Index CB-5-162/16-3.1

QMS NAU S 12.01.04–01-2017
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.

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Discussed and approved by the Foreign Languages and Applied Linguistics Department, Minutes № ___ of “___” ____________2017.
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Discussed and approved by the Scientific-Methodological-Editorial Board of the Educational and Research Humanities Institute, Minutes № ___ of “___” ____________2017.

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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.

2. SUBJECT CONTENT

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

**Topic 2.1.1. Ecology and ecosystems.**


**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.**


**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.**


**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.**

**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.**

**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.**
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.

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.

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.

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

Topic 2.4.15. Business and the environment. Production standards.

Topic 2.4.16. Prospects for the development of genetic engineering.

3. LIST OF REFERENCES

3.1. Basic Literature

3.2. Additional Literature

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.
3.2.6. Німецька мова для студентів технічних спеціальностей. Навчальний посібник. Київ, Видавництво «НАУ-друку», 2009. – 104 с.
3.2.7. Коржавин А.В. Практический курс французского языка для технических вузов. М: Высш. школа, 2008. – 372 с.
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