

EDUCATIONAL PROGRAMME: 8D01504-BIOLOGY

1 OPTIONAL COMPONENT OF THE CYCLE OF CORE COURSES

Optional component 1

Course: Commercialization of research and development

Intensity of the Course: 5 academic credits

Module Code: **CRB – 2**

Module Name: Current research in the field of biology

Prerequisites: CIFFW 5303 Current issues of flora and fauna of the world

Purpose: formation of an integrated knowledge system characterizing the process of commercialization of the results of scientific and technical activities and developments in the field of natural sciences.

Short Description: The study of theoretical and practical issues of the process of commercialization of scientific research and pedagogical developments in relation to the specifics of the training profile and the branch of science.

Learning Outcomes in EP (LOP):

LOP 3 - able to easily communicate in different communities, in 3 languages, have the skills to effectively convey ideas, know how to manage a team and be part of it, create an inclusive environment, are adaptive and open to new knowledge;

LOP 10 – A graduate concretizes the importance of scientific views in the knowledge of the natural-scientific image of the universe and the connections between fundamental and applied sciences.

Learning Outcomes in Course (LOC):

LOD 1 – Formation of general knowledge in the field of commercialization of scientific and technical developments.

LOD 2 – Familiarization and mastering the issues of independent business building based on scientific and technical developments.

LOD 3 – The formation of practical skills for the implementation of the stages of the process of commercialization of scientific and technical developments.

LOD 4 – Familiarization with market requirements and regulatory legal documents in the field of commercialization of scientific and technical developments, acquisition of skills in planning commercialization activities.

LOD 5 – Formation of the ability to plan and carry out activities in the field of innovative management and entrepreneurship for the commercialization of scientific and technical developments.

LOD 6 – Management of research and development teams.

LOD 7 – Analysis of current problems of commercialization of scientific and technical developments and ways to solve them.

Post requisites: Doctoral student research work, including internship and doctoral dissertation.

Optional component 1

Course: Actual problems of modern botany

Intensity of the Course: 5 academic credits

Module Code: **CRB – 2**

Module Name: Current research in the field of biology

Prerequisites: CIFFW 5303 Current issues of flora and fauna of the world

Purpose: Study of plant taxonomy, that is, floristry and botanical geography. Floristry studies plant communities in a given area. Botanical geography studies the distribution of plants on the planet. Study and recognition of the processes of vegetation formation in the early historical and modern periods.

Short Description: It studies plant systematics i.e. floristics and botanical geography. Floristics studies plant communities in a certain territory. Botanical geography studies the features of plant distribution in the World. It also studies and gets to know the vegetation formation processes in historically distant times and in the modern period of time.

Learning Outcomes in EP (LOP):

LOP 2 - use the principles of self-regulation, are reflective in all aspects of life, adhere to an active lifestyle, demonstrate openness to new knowledge, and have an exploratory inquisitiveness to receive and analyze information;

LOP 7 – A graduate forms in-depth science-based knowledge through analysis of topical problems of modern botany and mycology.

Learning Outcomes in Course (LOC):

LOD 1 – determines the role of modern botany in biological sciences and understands the main problems of modern botany;

LOD 2 – reviews of floristry and botanical geography, which are the main branches of science;

LOD 3 – conducts research aimed at understanding the processes of flora formation;

LOD 4 – understands the anatomy, morphology of plants, their practical application and a comprehensive understanding of their significance and use in agriculture;

LOD 5 – the features of the formation of the plant world, both ancient and modern, are identified, which are urgent problems of modern botany;

LOD 6 – knows how to use the methods of pedagogical analysis of the results of observations and experiments;

LOD 7 – can use an algorithm of pedagogical actions aimed at learning outcomes.

Post requisites: Doctoral student research work, including internship and doctoral dissertation.

2 OPTIONAL COMPONENT OF THE CYCLE OF MAJOR COURSES

Optional component 1

Course: Innovation technologies in biological education and scientific research

Intensity of the Course: 5 academic credits

Module Code: **CRB – 2**

Module Name: Current research in the field of biology

Prerequisites: MCBE 6301 Modern concepts of biological education

Purpose: development of educational and practical work using innovative educational technologies, systematic and accurate training of students in the direction of improving the socio-economic situation of the country.

Short Description: The use of innovative technologies in the educational and educational process and research, own methods of technology. Introduction of innovative technologies in the learning process, collection and processing of scientific facts, methods of pedagogical research and design and ability to work with databases as well as theoretical justification of research results.

Learning Outcomes in EP (LOP):

LOP 9 – A graduate applies at the professional level modern paradigm and innovative technologies in biological education and methods of scientific and pedagogical research.

LO 10 – A graduate concretizes the importance of scientific views in the knowledge of the natural-scientific image of the universe and the connections between fundamental and applied sciences.

Learning Outcomes in Course (LOC):

LOD 1 – development and collection of scientific results, theoretical bases and databases of pedagogical research methods and results of scientific research;

LOD 2 – develops modern paradigms and criteria for innovative processes;

LOD 3 – critically analyzes the methods used in modern research, methods of thinking of scientific research;

LOD 4 – forms informative competencies about the methods of organizing training through the adaptation of biological education to innovative technologies.

Post requisites: Doctoral student research work, including internship and doctoral dissertation.

Optional component 1

Course: Actual problems of biochemistry and bionanotechnology

Intensity of the Course: 5 academic credits

Module Code: CRB – 2

Module Name: Current research in the field of biology

Prerequisites: MTSR 6302 Methodology and technology of scientific research

Purpose: This course allows the professional qualifications and tasks in the field of biotechnology.

Short Description: Phytohormonal regulation of plant growth and development. Culture of plant cells and their features. Biotechnology of cells producing metabolites for industry. Cellular technologies in plant breeding. Micro-clonal reproduction of plants. Preservation of plant gene pool in vitro culture. Genetic engineering of plants.

Learning Outcomes in EP (LOP):

LOP 8 – A graduate forecasts the prospects of using the nano-cluster structures, modern advances in molecular biology and genetic engineering.

Learning Outcomes in Course (LOC):

LOD 1 – knows the requirements for biotechnological products;

LOD 2 – analyzes and summarizes information about new developments in biotechnology;

LOD 3 – studies biotechnological methods in accordance with the standard;

LOD 4 – knows the basic physiological and biotechnological methods of research of biological objects.

Post requisites: Doctoral student research work, including internship and doctoral dissertation.