BASICS OF BIOPLASTICS TECHNOLOGY

Cycle of Professional and Practical Training

Educational Level: Master's Degree

Total Hours – 150 (5 ECTS credits)

Instructor – Dmytro Olehhovych Bidiuk, PhD (Engineering), Senior Lecturer

Course Objective:

The aim of this discipline is to acquire, systematize, and consolidate theoretical knowledge about the global bioplastics market as the basis of modern packaging materials, their types and production technologies, processing methods, commercial applications, and mechanisms of biological degradation.

The course provides the following competences:

Ability to conduct research at an appropriate level.

Ability to generate new ideas (creativity).

Ability to select and apply specialized laboratory and technological equipment and instruments, scientifically grounded methods, and software for conducting research in the field of food technologies.

Ability to plan and carry out scientific research, taking into account global trends in scientific and technological development of the industry.

Ability to develop and implement commercial and scientific-technical projects in the field of food technologies, considering technical, commercial, and environmental issues.

Program Learning Outcomes:

Apply specialized equipment, modern methods and tools, including mathematical and computer modeling, to solve complex tasks in food technologies.

Develop and implement enterprise development programs in the industry for short- and long-term perspectives, analyze and evaluate their efficiency, as well as ecological and social consequences.

Ensure intellectual property protection in food technologies, conduct relevant patent research, and prepare documents for obtaining patents for inventions and utility models.

Apply knowledge and skills related to zero-waste technologies in existing enterprises of the food industry and foodservice establishments, introduce new methods of food preservation and storage, and use bioplastics for packaging raw materials, semi-finished, and finished products.

Course Content:

Bioplastics: Current Trends and Development Prospects

Types of Biodegradable Polymers as the Basis of Bioplastics

Types of Bioplastics and Their Production Technologies

Processing Methods of Bioplastics

Commercial Applications of Bioplastics

Degradation Mechanisms of Commercially Available and Promising Types of Bioplastics

Cutting-edge Technologies of Bioplastics