

Learning outcomes

Knowledge

Code	Contents
IBE_P6S_WG01	the graduate knows and understands at an advanced level issues in the field of biology, chemistry, microbiology and related sciences useful for understanding and interpreting processes related to the bioeconomy
IBE_P6S_WG02	the graduate knows and understands issues in the field of mathematics, statistics used in formulating and solving simple tasks in the area of bioeconomy
IBE_P6S_WG_03	the graduate knows and understands at an advanced level issues in the field of water and sewage management, waste management and non-waste management
IBE_P6S_WG04	the graduate knows and understands at an advanced level issues in the field of key issues in the field of environmental protection, including the sustainable use of natural resources
IBE_P6S_WG05	the graduate knows and understands at an advanced level the issues of biotransformation, biorefining, bioconversion and the use of biomass and byproducts in the bioeconomy
IBE_P6S_WG06	the graduate knows and understands the knowledge of meteorology and climatology, protection and pollution of the atmosphere
IBE_P6S_WG07	the graduate knows and understands at an advanced level issues in the field of process engineering, including fluid mechanics, thermodynamics, rheology
IBE_P6S_WG08	the graduate knows and understands at an advanced level issues in the field of methods, techniques, tools and materials used for the purification, identification and characterization of bioproducts
IBE_P6S_WG09	the graduate knows and understands at an advanced level issues in the field of sustainable production, processing and use of raw materials in the bioeconomy
IBE_P6S_WG10	the graduate knows and understands at an advanced level issues in the field of construction, functions, how to use devices and technical systems used in production processes
IBE_P6S_WG11	the graduate knows and understands at an advanced level issues in the field of design and operation of bioreactors and biorefineries
IBE_P6S_WG12	the graduate knows and understands at an advanced level issues in the field of information technology, the basics of design and programming
IBE_P6S_WG13	the graduate knows and understands the rules that allow to predict the development of technology and innovation in the bioeconomy
IBE_P6S_WG14	the graduate knows and understands at an advanced level research methods, methods of use and evaluation of biomaterials and bioproducts
IBE_P6S_WG15	the graduate knows and understands the sources of scientific and technical-engineering information, has knowledge of new techniques and technologies used in bioeconomy; knows the rules of writing diploma theses, including using the works of other authors and preparing multimedia presentations and public speeches, knows the specialist terminology needed to prepare a diploma thesis
IBE_P6S_WG16	the graduate knows and understands at an advanced level the enzymatic, microbiological, physical, chemical and biological processes used in the bioeconomy
IBE_P6S_WG17	the graduate knows and understands at an advanced level the principles, methods and technologies of environmental monitoring, adaptation to climate change, the principles of sustainable development and product life cycle assessment
IBE_P6S_WG18	the graduate knows and understand the basic methods of supply chain design, including the use of artificial intelligence methods
IBE_P6S_WG19	

Code	Contents
IBE_P6S_WK01	the graduate has the knowledge necessary to understand the social, economic and legal principles of running a business
IBE_P6S_WK02	the graduate has basic knowledge in the field of intellectual property protection, copyright and knows the rules of commercialization
IBE_P6S_WK03	the graduate knows the basic methods used in design thinking

Skills

Code	Contents
IBE_P6S_UU01	the graduate has the ability to define the directions of further learning in order to improve professional competences
IBE_P6S_UW01	the graduate has the ability to search, understand, analyze and use information about bioeconomy in a creative way
IBE_P6S_UW02	the graduate has the ability to communicate using various techniques in a professional environment in the field of bioeconomy also in the language at the B2 level of the European System for the Description of Languages.
IBE_P6S_UW03	the graduate has the ability to prepare an engineering study (along with a presentation) in the field of bioeconomy
IBE_P6S_UW04	the graduate has the ability to use selected computer programs for design, data processing, analysis and graphic presentation
IBE_P6S_UW05	the graduate has the ability to solve interdisciplinary engineering tasks, also working in a group, using analytical, simulation and experimental methods in the field of bioeconomy
IBE_P6S_UW06	the graduate has the ability to test hypotheses related to simple research problems related to the bioeconomy, skilfully interprets the obtained results and formulates conclusions
IBE_P6S_UW07	the graduate has the ability to assess the usefulness and possibilities of using new achievements in the field of bioeconomy
IBE_P6S_UW08	the graduate has the ability to make a preliminary economic analysis of the engineering activities undertaken and the profitability of simple production processes
IBE_P6S_UW09	the graduate has the ability to identify threats, both theoretical and practical, processes taking place in the bioeconomy and has the preparation necessary to work in an industrial environment
IBE_P6S_UW10	the graduate recognizes non-technical aspects, including environmental, organizational, social, economic and legal when formulating and solving engineering tasks
IBE_P6S_UW11	the graduate has the ability to assess the suitability of appropriate analytical methods and laboratory techniques to assess the physical, chemical and biological properties of raw materials and products produced and used by the bioeconomy
IBE_P6S_UW12	the graduate has the ability to choose the conditions for conducting typical unit processes related to the processing of bioproducts and to estimate the demand for energy and raw materials in these processes
IBE_P6S_UW13	the graduate has the ability to use basic measurement methods to control the course of processes characteristic of the bioeconomy
IBE_P6S_UW14	the graduate has the ability to select typical devices and apparatus used in the bioeconomy
IBE_P6S_UW15	the graduate has the ability to design and optimize technological processes and supply chains used in the bioeconomy, taking into account the principles of process safety
IBE_P6S_UW16	the graduate has the ability to make a critical analysis of the functioning of the existing technical solutions, in particular systems, processes, services, devices and facilities

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IBE_P6S_UW17	the graduate has the ability to select water treatment and renewal technologies, wastewater treatment, use of sludge and residual materials
IBE_P6S_UW18	the graduate has the ability to apply the principle of rational management of natural resources

Social competence

Code	Contents
IBE_P6S_KK01	the graduate understands the need for development, updating his knowledge, knows the possibilities of developing professional and interpersonal competences and consulting experts
IBE_P6S_KO01	the graduate is responsible for his / her own work and the consequences of the decisions made
IBE_P6S_KO02	the graduate is able to correctly define the priorities for the implementation of tasks set, by himself or others, and to ensure their timely implementation
IBE_P6S_KO03	the graduate is ready to be ready to undertake economic undertaking
IBE_P6S_KO04	the graduate is ready to bear social, professional and ethical responsibility for the state of the environment
IBE_P6S_KR_01	the graduate is able to correctly identify and resolve dilemmas related to the profession of an engineer; is aware that the result of the engineer's activity depends on the correct recognition of the problem; adheres to the principles of professional ethics and personal culture and requires it from others