GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	TECHNOLOGICAL PROJECT, PG_00063451		
Field of study	Biotechnology		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
Education level	second-cycle studies	Subject group	Obligatory subject group in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	1	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Chemistry, Technology and Biochemistry of Food -> Faculty of Chemistry		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Robert Tylingo	
	Teachers	dr hab. inż. Robert Tylingo	

Lesson types and methods of instruction							
	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	0.0	30.0	0.0	30
	E-learning hours included: 0.0						

Learning activity and number of study hours					
	Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
	Number of study hours	30	5.0	40.0	75

Subject objectives	The aim of the course is to familiarize students with team working methods and the creation of technical documentation for industrial installations, taking into account sector-specific issues, as well as to acquire skills in designing technological processes related to the chosen field of graduation, including technological projects in the food, pharmaceutical, and molecular biotechnology industries.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_W06] recognizes the technological and scientific, as well as organizational and economic opportunities and limitations in biotechnology and related fields	Student is able to identify key challenges and barriers in designing and implementing technological innovations in the food, pharmaceutical and molecular biotechnology industries utilizes his acquired knowledge to effectively create project teams, develop comprehensive technical documentation, and design technological processes that are tailored to specific industry requirements and regulations.	[SW3] Assessment of knowledge contained in written work and projects [SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge
	[K7_U08] prepares documentation of experiments and technological processes using professional terminology in biotechnology and related fields	The student is capable of preparing comprehensive documentation of experiments and technological processes, using professional terminology appropriate for biotechnology and related fields. They demonstrate competence in accurately describing procedures, observations, experimental results, and critical analysis of processes, while adhering to industry standards and requirements. They possess skills in creating clear and understandable reports and other technical documents, which are essential for validation and communication in a professional environment.	[SU2] Assessment of ability to analyse information [SU5] Assessment of ability to present the results of task
	[K7_U04] predicts the interaction of biomolecules and biologically active compounds on living organisms and the course of processes involving them based on knowledge in biology, biotechnology and related fields and computer methods of data analysis, modeling and simulation	Student demonstrates the ability to effectively use information technology tools such as computerized methods for data analysis, modeling, and simulation in the context of solving engineering problems and implementing biotechnological innovations within technological projects. The student shows the ability to integrate various information sources and to formulate justified hypotheses based on them concerning new applications of biomolecules in engineering practice.	[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information
Subject contents	I Project management,Critical path of project task implementation,Work schedule (Gantt chart)Reporting on the implementation of individual project tasks.II Technological designShort descriptionJustification for the selection of the technological methodDescription of the technological method and alternative solutionsProcess schematic diagramMass balance (Sankey chart)Optionally energy and heat balanceCharacteristics of raw materials, semi-finished products, products and auxiliary materials.Selection of equipment, equipment variants depending on technological solutions and production volume. Technological diagramEquipment work schedule (Gantt chart)Critical path of the technological process		
Prerequisites and co-requisites	Has sufficient knowledge of inorganic, organic, analytical and physical chemistry to understand technological processes. Has knowledge of basic techniques and research tools used in biotechnology and selected methods of related fields and scientific disciplines; knows the development of biotechnology methods; understands basic techniques used in isolation, selection, synthesis, modification and analysis of organisms, tissues, cells and molecules. Knows the principles of operation of basic measuring and process equipment used in chemistry and biotechnology. Can use scientific language typical of biotechnology.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Project	60.0%	100.0%

Recommended reading	Basic literature	Anderson N.G. Practical Process Research and Development. Academic Press, San Diego, California, USA, 2000 Pikon J. Podstawy Konstrukcji Aparatury Chemicznej. Cz. 1, Tworzywa Konstrukcyjne. PWN, Warszawa, 1979 Synoradzki. L., Wisialski. J. Podstawy. projektowania. procesow technologicznych. Od laboratorium do instalacji przemysłowej. OWPW, 2019. Wymagania systemu GMP, HACCP, ISO 22000.
	Supplementary literature	Gawlik, E., Gil, S., & Zagórski, K., "Projektowanie procesów technologicznych", Wydawnictwo Naukowe PWN, Warszawa, 2020 Inżynieria procesowa i bioprocesowa", seria książek, Wydawnictwo Naukowe PWN, Warszawa, 2018.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Support for Auto CAD software in the implementation of technological diagrams of the designed process.	
Work placement	Not applicable	

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