



Subject card

Subject name and code	Food Technology Processes, PG_00037515						
Field of study	Biotechnology						
Date of commencement of studies	October 2020	Academic year of realisation of subject			2023/2024		
Education level	first-cycle studies	Subject group			Optional subject group Subject group related to scientific research in the field of study		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	4	Language of instruction			Polish		
Semester of study	7	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			exam		
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						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	30.0	0.0	0.0	60
	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	60		4.0		36.0	100
Subject objectives	A student must be familiar with programme and technological process of food processing, and what changes occur in the manufacturing process of food ingredients, and functional properties of processed food.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_W08						
	K6_U10						
Subject contents	<p>The scope of food technology, characteristics, composition, nutritional value and functional quality of food grains, oil seeds, potato, sugar beet, milk, fish, eggs, meat and other food sources. Quality and nutritional value of food products. Classification and purpose of application of food additives. General flow sheet of food processing. Pretreatment of raw food materials. Technological principles in food industry. Methods of washing and disinfection in food industry, used washing aids. The most important methods of food preservation. Unit operations and unit processes in food technology. Mechanical operations during isolation of potato starch and oil from oil seeds. Unit operations of brewing, winemaking, and meat and fish processing. Applications of heating, cooking, blanching, backing, roasting, frying, sterilization and pasteurization. Thermal operations in sugar, bakery, sausages and canned food industry. Separation of suspended matter, suspended solids and pulps. Suitability of different methods of separation in corn milling, starch separation, oil seeds processing, brewing and winemaking. Application of diffusion, emulsification, crystallization, coagulation, gelation and membrane separation in food processing. Pressing and extraction of rapeseed oil. Main methods of refining and modification of lipids. Chemical transformation of food materials: hydrolysis, neutralization and hydrogenation of lipids. Applications of chemical and enzymatic operations for production of starch syrups, protein hydrolysates and inverted sugar. Application of milk and alcoholic fermentations for production of different food products. Production of protein preparations from by-products of food industry and biomass of microorganisms.</p>						
Prerequisites and co-requisites	Basic knowledge in area of chemical technology, biotechnology and enzymology.						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Exam		60.0%		65.0%		
	Laboratory classes: report, periodic practical and oral examinations.		60.0%		35.0%		

Recommended reading	Basic literature	Pijanowski E., Dłużewski M., Dłużewska A., Jarczyk A.: Ogólna Technologia Żywności. WNT, Warszawa, 2000. Lewicki P.P (red.): Inżynieria Procesowa i Aparatura Przemysłu Spożywczego. WNT, Warszawa, 1999. Praca zbiorowa pod redakcją J. Synowieckiego, Wybrane zagadnienia z technologii fermentacyjnych przemysłu spożywczego. Wyd. PG, Gdańsk, 2007. Kłyszczko – Stefanowicz L.: Ćwiczenia z Biochemii. PWN, Warszawa, 1999. Szlegel H.G.: Mikrobiologia Ogólna. PWN, Warszawa, 1996.
	Supplementary literature	Sikorski Z.E. (red. naukowy): Chemia Żywności. WNT, Warszawa, 2002. Recent Research Developments in Food Biotechnology. Enzymes as Additives or Processing Aids. Porta R., Di Pierro P., Mariniello L., (red.). Research Signpost, 2008. Enzymatyczna Modyfikacja Składników Żywności. Kołakowski E., Bednarski W., Bielecki S., (red.), WAR, Szczecin, 2005.
	eResources addresses	
Example issues/ example questions/ tasks being completed	<p>Fermentation technology.</p> <p>Technology of Cheesemaking</p> <p>Beer production methods.</p> <p>Milk processing.</p> <p>The sugar production process.</p>	
Work placement	Not applicable	