GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	From Idea To Industry, PG_00049136		
Field of study	Chemical Technology		
Date of commencement of studies	February 2022	Academic year of realisation of subject	2022/2023
Education level	second-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	1	Language of instruction	Polish
Semester of study	2	ECTS credits	1.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Polymers Technology -> Faculty of Chemistry		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Maciej Sienkiewicz	
	Teachers	dr inż. Maciej Sienkiewicz dr hab. inż. Andrzej Nowak dr inż. Aneta Pacyna-Kuchta	

Lesson types and methods of instruction							
	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	0.0	15.0	0.0	15
	E-learning hours included: 0.0						
	Od pomysłu do przemysłu sem. 2 /zimowy 2022/2023 - Moodle ID: 25378 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=25378						

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	15	5.0	5.0	25

Subject objectives	Teaching students to study design of prototypes of simple products classified as inventions in the field of polymer technology, products and functional materials from the decisions of pro-environmental elements and preliminary materials for a patent application or description of know-how.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K7_W07	Is able to use the knowledge of biotechnological processes in the design of biologically active materials used, for example, in medicine, in the food industry, cosmetics industry, production of polymeric materials, and properly adapt known production technologies in order to obtain these materials.	[SW1] Assessment of factual knowledge
K7_W08	Is able to use the knowledge of colloidal systems in the designing of products such as detergents, polymer products, and functional materials, and can adapt production technologies to their obtaining	[SW1] Assessment of factual knowledge
K7_W01	Is able to use in the designing of products the knowledge gained in the field of chemical reactor engineering, chemometry, technological processes appropriate to the field of specialization, and knows how to use the mathematical tools for their modeling	[SW1] Assessment of factual knowledge
K7_K01	Is able to use the knowledge of technology appropriate for the specialization to design a prototype of simple pro-environmental products.	[SK5] Assessment of ability to solve problems that arise in practice
K7_K04	knows the organization of team work and the ways of division of tasks	[SK1] Assessment of group work skills [SK3] Assessment of ability to organize work

Subject contents

Designing innovative products, their trademark (logotype), preparing an overview of the state of the art based on scientific publications and patents with an application indicating the validity of introducing innovation, developing the stages of making a prototype or production/synthesis process, etc., description of the necessary raw materials and test methods to be performed and testing the prototype, preparation of a mini-business plan taking into account raw material costs, competitive products on the market, preparation of a manuscript for a patent application or a description of know-how.

Prerequisites and co-requisites

basic knowledge of chemistry and technology of polymers, cosmetics and functional materials

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
partial reports	60.0%	30.0%
activity in the group	60.0%	20.0%
finla presentation	60.0%	50.0%

Recommended reading

Basic literature

O. Levensiel, Chemical reaction engineering, J. Wiley & Sons., 1999

M. Aulice Scibioh, B. Viswanathan, Materials for Supercapacitor Applications, Elsevier, 2020

P.T. Lodge, P.C. Hiemenz, Polymer Chemistry, CRC Press, 2020

D.H. Everett, Basic principles of colloid science, RSC, London, 1992

	Supplementary literature	Charles E. Carraher Jr., Introduction to Polymer Chemistry, CRC Press, 2017 F. Garbassi , M. Morra, E. Occhiello, Polymer Surfaces from Physics to Technology, John Wiley and Sons, Chichester, 2000 P.G. Bruce, Solid State Electrochemistry, Cambridge University press, 2000 J.M. Walker, R.Rapley, Molecular Biology and Biotechnology,The Royal Society of Chemistry, 2000 T.F. Tadros, Interfacial Phenomena and Colloid Stability, Vol.1 Basic Principles, Vol. 2: Industrial Applications, de Gruyter, 2015
	eResources addresses	
Example issues/ example questions/ tasks being completed	Development of an innovative solution, preparation of a prototype or improvement of know technologies in the field of chemistry and technology of cosmetics, functional additives for cosmetic products and food (e.g. dietary supplements) in the form of microcapsules Development of an innovative solution, preparation of a prototype, or improvement of know technologies in the field of chemistry and technology of polymers, polymer mixtures, or polymer composites, biodegradable plastics, polymer products for medical application, products obtained by injection, extrusion, or thermoforming process, as well as bitumen and their modification products. Development of an innovative solution, preparation of a prototype, or improvement of know technologies in the field of electricity storage and conversion processes; (lithium-ion batteries; anode systems).	
Work placement	Not applicable	