



Subject card

Subject name and code	Machines in plastics processing, PG_00060804						
Field of study	Chemical Technology						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2026/2027		
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	3		Language of instruction		Polish		
Semester of study	6		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Polymer Technology -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Justyna Kucińska-Lipka				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	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		2.0		18.0	50
Subject objectives	The aim of the course is to learn about the types of machines used in the plastics industry, their construction, equipment, principles of operation and use in the production of plastic products.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_K05] is aware of the social role of a technical university graduate, and in particular understands the need to formulate and communicate to the public, in particular through the mass media, information and opinions on the achievements of technology and other aspects of engineering activity	The student is able to present, in both technical and popular science terms, the machines and equipment used in the plastics industry, as well as the everyday products created through their use. The student understands the social role of engineers in disseminating scientific and technical knowledge in a way that is accessible to a wide range of people.	[SK2] Assessment of progress of work [SK4] Assessment of communication skills, including language correctness
	[K6_W05] has knowledge of chemical technology based on mineral or energy resources and modern energy sources, understands the concept of sustainable development, knows the principles of green chemistry and environmentally friendly process engineering, has knowledge of occupational safety in the chemical industry	The student will have knowledge of the construction and operation of basic equipment used in plastics and rubber processing. The student will have knowledge of occupational health and safety in the plastics industry.	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
	[K6_U07] recognizes and identifies the basic polymer processing methods used in industry, classifies and differentiates the equipment used for these purposes	The student can describe the operating principles and uses of machines and equipment used in the plastics industry. The student can explain the differences between the operation of various machines and equipment and the products they produce.	[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject
	[K6_W09] has knowledge of the technological and functional properties of polymers, the physical basis and processing methods of polymers and rubber	The student knows and is able to list and characterize in detail the basic methods of plastics processing.	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
Subject contents	Course content – lecture Types, construction, and operating principles of machines in the plastics industry: injection molding machines, extruders, blow molding machines, thermoforming machines, mills, rolling machines, calendars, mixers and agitators, presses, vulcanizing machines, dosing and mixing units, chemical tanks and reactors. Principles of safe work with industrial machinery. Course content – laboratory • Construction and Principles of Operation of an Injection Molding Machine • Construction and Principles of Operation of an Extruder • Construction and Principles of Operation of a Thermoforming Machine • Construction and Principles of Operation of a Rolling Mill and Hydraulic Press • Construction and Principles of Operation of a Dosing and Mixing Unit		
Prerequisites and co-requisites	Basic knowledge of chemical machinery		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	laboratory: attendance, tests, reports, activity during classes	85.0%	45.0%
	lecture: written test	60.0%	55.0%
Recommended reading	Basic literature	• R. Sikora: Przetwórstwo tworzyw wielkocząsteczkowych, Wydawnictwo Edukacyjne Zofii Dobkowskiej, 1993 • K. Wilczyński (Red.): Przetwórstwo tworzyw polimerowych. Laboratorium, Wydawnictwo Politechniki Warszawskiej, 2025	
	Supplementary literature	Detailed literature recommended by the lecturers	
	eResources addresses		
Example issues/ example questions/ tasks being completed	• Construction and operation of an injection molding machine • Construction and operation of an extruder • Construction and operation of a thermoforming machine • Construction and operation of a rolling mill • Construction and operation of a dosing and mixing unit		
Practical activities within the subject	Not applicable		

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