GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Machines in plastics processing, PG_00060804		
Field of study	Chemical Technology		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2027/2028
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_W05] Has knowledge of electrical engineering, automation and computer science, including the operation of measurement and control systems	The student 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
[K6_U04] Is able to recognize and apply polymer processing methods, analyze corrosion processes of construction materials in the design of installations, taking into account systemic and non-technical aspects.	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.	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools
[K6_U07] Is able to select and justify a chemical and technological production concept, assess the quality of products and analyse and evaluate existing technical solutions.	The student is able to list and describe in detail the basic methods of plastics processing. The student is able to select a processing method and processing machinery, and justify their choice.	[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject

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, calenders, 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

<table>
<tr><td>Prerequisites and co-requisites</td><td colspan="3">Basic knowledge of chemical machinery</td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>laboratory: attendance, tests, reports, activity during classes</td><td>85.0%</td><td>45.0%</td></tr>
<tr><td>lecture: written test</td><td>60.0%</td><td>55.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">• R. Sikora: Przetwórstwo tworzyw wielkocząsteczkowych, Wydawnictwo Edukacyjne Zofii Dobkowskiej, 1993
• K. Wilczyński (Red.): Przetwórstwo tworzyw polimerowych. Laboratorium, Wydawnictwo Politechniki Warszawskiej, 2025</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">Detailed literature recommended by the lecturers</td></tr>
<tr><td>eResources addresses</td><td colspan="2"></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3">• 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</td></tr>
<tr><td>Practical activites within the subject</td><td colspan="3">Not applicable</td></tr>
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