



Subject card

Subject name and code	Numerical modeling of plastic shaping processes, PG_00064724						
Field of study	Management and Production Engineering						
Date of commencement of studies	February 2026		Academic year of realisation of subject		2026/2027		
Education level	second-cycle studies		Subject group		Specialty 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		4.0		
Learning profile	general academic profile		Assessment form		exam		
Conducting unit	Division of Materials Science and Technology -> Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology -> Wydziały Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Michał Landowski				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	15.0	15.0	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		9.0		31.0	100
Subject objectives	The aim of the course is to familiarize students with the basic issues related to forming processing of construction materials						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_W03] demonstrates structured and theoretically based knowledge covering key issues in the field of Management and Production Engineering enabling the design and synthesis of stationary and non-stationary systems, devices and technological processes with continuous and discrete operation		The student demonstrates knowledge of modeling forming processes.		[SW3] Assessment of knowledge contained in written work and projects		
	[K7_K11] is aware of importance of professional acting, the need for critical verification of acquired knowledge and consulting experts opinion in case of facing difficulties with individual problem solving		The student critically considers the results of numerical analyses. Verifies them.		[SK5] Assessment of ability to solve problems that arise in practice		
	[K7_U03] identifies and formulates the specification of tasks in the field of designing stationary and part-time production and technological systems/processes, including tasks taking into account non-technical aspects of business activity		The student analyzes the technological process and optimizes it.		[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject		
	[K7_U14] integrates information obtained from literature and other properly selected sources, including those in a foreign language, creatively interpreting and critically evaluating them, and drawing conclusions		The student is able to use data from sources and determine the influence of factors on forming processes.		[SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment		

Subject contents	The lecture covers the processes of producing elements by forming processing, selecting materials and semi-finished products. Selection of processes and process parameters. The laboratory includes numerical modeling of plastic forming processes and verification of calculations during real processes. Modeling of processes, selection of parameters and analysis of errors during processes.The project includes the design of a forming tool and FEM analysis of the process.		
Prerequisites and co-requisites	Knowledge of the basics of materials science and manufacturing processes (forming processing)		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Project	100.0%	30.0%
	Exam	50.0%	40.0%
	Laboratory	100.0%	30.0%
Recommended reading	Basic literature	1.Golatowski T.: Mechanizacja i automatyzacja w tłocznictwie. WNT, Warszawa 1978. 2. Skarbiński M.: Technologiczność konstrukcji maszyn. WNT, Warszawa 1977. 3. Golatowski T.: Aspekty ekonomiczne konstrukcji tłoczników. Prace ITB, 1980.	
	Supplementary literature	1. Erbel S., Kuczyński K., Marciniak Z.: Obróbka plastyczna .Warszawa. PWN 1986 2. Romanowski W.P.: Poradnik obróbki plastycznej na zimno. Warszawa: WNT 1976	
	eResources addresses		
	Example issues/ example questions/ tasks being completed	Design a tool for the stamping process of a progressive element. Analyze the flow of the material during the extrusion process.	
Work placement	Not applicable		

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