



## Subject card

Subject name and code		Materials Technology , PG_00040040						
Field of study		Mechanical Engineering						
Date of commencement of studies		October 2021	Academic year of realisation of subject			2021/2022		
Education level		first-cycle studies	Subject group			Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
Mode of study		Part-time studies	Mode of delivery			at the university		
Year of study		1	Language of instruction			Polish		
Semester of study		2	ECTS credits			3.0		
Learning profile		general academic profile	Assessment form			assessment		
Conducting unit		Department of Materials Engineering and Bonding -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)		Subject supervisor		dr inż. Michał Landowski				
		Teachers		dr inż. Michał Landowski				
Lesson types and methods of instruction		Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
		Number of study hours	15.0	0.0	8.0	0.0	0.0	23
		E-learning hours included: 0.0						
		Technologia materiałów, W/L, MiBM NST, sem. 02, lato 21/22, PG_00040040 - Moodle ID: 23193 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=23193">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=23193</a>						
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	23	7.0		45.0	75	
Subject objectives		Student gains the knowledge of basic technologies of getting metal alloys, creating casts and components worked plastically. Produces casting forms. Carries out practically rolling, pressing, cutting and drawing. Gets know how to examine metal features.						
Learning outcomes		Course outcome		Subject outcome		Method of verification		
		[K6_W03] possesses and is able to practically apply the knowledge on the construction, properties and testing methods of construction materials		Learns methods of testing the properties of metal materials. The student learns the methods of shaping elements by casting and forming.		[SW1] Assessment of factual knowledge		
		[K6_U10] is able to formulate the principles of selecting a material for a construction, ensuring the correct operation of a device		The student knows the basic groups of engineering materials. Is able to determine the influence of manufacturing techniques on the properties of materials.		[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information		
Subject contents		<p>Metallurgy of metals and its alloys. Metallurgy of pig iron. Steelmaking. Smelting of the steel in the electric furnaces. Metallurgy of the cast iron. Methods of casting. Manual and machine-made sand casting. Moulding materials. Automatization and mechanization of forming and creating the core. Special methods of making forms of the core. Special methods of casting. Bases of the plastic working. Plastic strain of metals. The influence of the plastic strain in the metal features. Classification of plastic working processes. Rolling of metals. Construction and classification of the rolling mills. Rolling stock. Heating of the stock. Rolling of the billets and blooms. Rolling of the sections. Rolling of the tubes. Forging and pressing. Machines for forging and pressing. Flat die forging. Die/drop forging. Classifications of the forgings. Drawing and extrusion. Characteristic of the drawing and extrusion processes. Drawbenches. Extruding press. Bar, Wire and tube drawing technology. Extrusion processes technology. Stamping of coats and classification of its processes. Shearing of metals. Bending of metals. Progressive pressing and compound die. Casting and plastic working processes and its influence on the natural environment. LABORATORY PRACTICAL TRAINING. Preparing of casting processes. Execution of forms by using sectional and not-sectional models. Machines for plastic working. The influence of the plastic strain in the metal features. Rolling. Plastic bending of profiles and tubes. Stamping of coats.</p>						

Prerequisites and co-requisites	Not required		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
		50.0%	50.0%
		50.0%	50.0%
Recommended reading	Basic literature	1. Poradnik inżyniera: Odlewnictwo. WNT. Warszawa 1974 2. Murza - Mucha K.: Techniki wytwarzania. Odlewnictwo. PWN Warszawa 1978 3. Dobrucki W.: Zarys obróbki plastycznej metali. Śląsk 1992 4. Skoblik R., Wilczewski L.: Technologia Metali. Laboratorium. 2006r. <a href="http://www.wbss.pg.gda.pl">www.wbss.pg.gda.pl</a>	
	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 3. Szweycer M., Nadolska D.: Metalurgia i odlewnictwo. Poznań: Wyd. Polit. Pozn. 2002	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Metallurgy of metals and its alloys. Manual and machine-made sand casting. Bases of the plastic working. Plastic strain of metals. The influence of the plastic strain in the metal features.		
Work placement	Not applicable		