GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Materials Technology , PG_00039870		
Field of study	Mechanical Engineering, Mechanical Engineering		
Date of commencement of studies	October 2020	Academic year of realisation of subject	2020/2021
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	Full-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	mgr inż. Adrian Wolski dr inż. Jacek Haras mgr inż. Anna Janeczek 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	15.0	0.0	0.0	30

E-learning hours included: 0.0

Technologia materiałów - W/L, MiBM, sem. 2, PG_00039870 - Moodle ID: 13635
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=13635

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	5.0	40.0	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.	[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject

Subject contents	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.
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. www.wbss.pg.gda.pl
	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	