GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Materials and the Progress of Civilization, PG_00049099		
Field of study	Materials Engineering, Materials Engineering, Materials 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 Humanistic-social subject group
Mode of study	Full-time studies	Mode of delivery	blended-learning
Year of study	1	Language of instruction	Polish
Semester of study	1	ECTS credits	5.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Polymer Technology -> Faculty of Chemistry		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Ewa Głowińska	
	Teachers	dr inż. Ewa Głowińska dr inż. Tomasz Seramak prof. dr hab. inż. Bogusław Kusz dr inż. Paulina Parcheta-Szwindowska dr inż. Łukasz Zedler dr inż. Paulina Kosmela	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	15.0	0.0	0.0	45

E-learning hours included: 30.0

Adresy na platformie eNauczanie:
Materiały a postęp cywilizacji - Moodle ID: 17624 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=17624

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	45	10.0	70.0	125

Subject objectives

To provide knowledge on the importance of materials in social, cultural and technical development. Presentation of current achievements in material engineering.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_W10	The student knows the social and ethical considerations of engineering business.	[SW1] Assessment of factual knowledge
K6_U07	The student is able to use the databases available at the university.	[SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools
K6_K01	The student is aware of the need to constantly expand professional knowledge due to the rapid progress in the field of materials science	[SK3] Assessment of ability to organize work
K6_W08	The student knows the stages of development of civilization and historical era in conjunction with the progress in the use of materials and their manufacture	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects

Subject contents	Lecture: The concept of engineering materials and their division. Definition of civilization, known civilizations in human history. historical eras. The history of the use of stone from Paleolithic to modern times; the use of stone in agriculture and the production of weapons, housing development. The invention and application of consumer ceramics. The use of wood by civilizations; history of the development of vessels and flying machines, the use of wood in the production of weapons, agricultural tools, everyday life. Other prehistoric materials: animal bones and skins. The Copper and Bronze Age: smelting of metals, manufacturing of utilitarian objects, the importance of copper and bronze products in the development and collapse of civilization. The use of gold and silver by civilizations. Iron age: production of welding iron, development of heat and thermo-chemical treatment, emergence of large-scale industrial production technologies, the emergence of modern smelting methods. Contemporary: the use of other metals and their impact on the development of civilization. The use of natural polymers in the history of mankind, the invention of artificial polymers and their importance for current civilization. Development of functional electronic and magnetic materials. The importance of developing research methods and the emergence of materials engineering. Forecast for further development of materials. The role of polymers in the development of civilization. Laboratory The use of various materials by humans in chronological (historical) terms. Division of engineering materials and their general properties. Applications of the main groups of engineering materials. History of metallurgy of iron alloys with examples of products and metallographic observations of their structure. Examples of polymers in historical terms. Examples of functional electronic and magnetic materials from a historical perspective.
Prerequisites and co-requisites	
Assessment methods and criteria	

Subject passing criteria	Passing threshold	Percentage of the final grade
Written exam	60.0%	60.0%
Laboratory	100.0%	40.0%

Recommended reading	Basic literature	Rolf E. Hummer, Understanding Materials Science: History, Properties, Applications, Springer; 2nd edition (August 3, 2004) **ISBN-13:** 978-0387209395 **ISBN-10:** 0387209395
	Supplementary literature	Journals from literature databases from the main library
	eResources addresses	Materiały a postęp cywilizacji - Moodle ID: 17624 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=17624
Example issues/ example questions/ tasks being completed		What materials were used during the times of Alexander the Great? Did the conquest of India enrich the knowledge of materials? Materials known in America in pre-Columbian times. Medieval war techniques from the point of view of materials engineering. Comparison of knowledge of materials in the civilizations of ancient China and Egypt. Did the period of Renaissance result in learning new materials? What materials contributed to the transformation of craft into industry. A brief history of rubber and rubber. The time machine takes you into the fall of the Roman Empire and allows you to take with you the technology of obtaining one of the materials currently known. Could you then save the empire? In what area of knowledge about materials did the Moors surpass medieval Europeans? Materials as information carriers throughout history. How did gold contribute to the development of the technique? Traditional and modern materials in electrical engineering. Design a car without any metal parts. Has the conquest of space resulted in the spread of new materials? Does consumer society waste materials? If so, how can this be remedied? Stages of globalization in the development of technology. Materials engineering achievements recognized by the Nobel Prize Committee
Work placement		Not applicable

Document generated electronically. Does not require a seal or signature.