University of Gdańsk

Subject card

Subject name and code	The use of mineralogical and petrographic studies in the conservation of historical monuments, PG_00193000		
Field of study	Geology		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2028/2029
Education level	Bachelor's studies	Subject group	Obligatory subject group in the field of study Optional subject group
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	5	ECTS credits	1.0
Learning profile	academic	Assessment form	credit
Conducting unit	Laboratory of Marine Geology -> Department of Chemical Oceanography and Marine Geology -> Faculty of Oceanography and Geography -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Michalina Dzwoniarek-Konieczna	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	0.0	0.0	0.0	15

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	15	1.0	9.0	25

Subject objectives

Aim of the course is to acquaint students with the methods of research on minerals and rocks used in the study of artifacts and their conservation.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[GEOLL3_W02] knows and understands the terminology appropriate in science and natural sciences	knows and understands the basic terms and terminology related to the subject	[SW4] test/exam - oral or written
[GEOLL3_K01] is willing to plan and implement, individually or as a team, the next stages of the entrusted task, take responsibility for its results, effectively cooperate in the team by performing various roles in it	is aware of the need to protect cultural heritage and is ready to plan and carry out research on entrusted historical material, taking responsibility for its results	[SK4] test/exam - oral or written
[GEOLL3_K03] is willing to exercise caution and criticism in receiving information from scientific literature, the Internet and other media related to natural sciences	is prepared to exercise caution and criticism in accepting information relating to the use of mineralogical-petrographic methods in the study of historical objects	[SK4] test/exam - oral or written
[GEOLL3_W03] knows and identifies paleontological, mineralogical, petrographic and structural objects using appropriate methods	knows and identifies historical objects made of mineral resources and geological, chemical and physical research methods to their analysis	[SW4] test/exam - oral or written
[GEOLL3_U06] is able to identify geological objects and combine them with geological processes and anthropogenic environmental transformations	is able to identify historical objects and connect them with geological and anthropogenic processes influencing their state of preservation	[SU4] test/exam - oral or written
[GEOLL3_U01] is able to apply basic measurement and analytical techniques in the field and in the laboratory, plans to conduct research and measurements	understands the working of basic measurement and analytical techniques used in specialist research on historic materials; plans to research program on historical objects	[SU4] test/exam - oral or written

Subject contents

1. Basic terms related to the subject matter; introduction to the problems of archaeological and conservation research.

2.Various aspects of the use of mineral and rock raw materials in the past.

3. Review of the main mineral and rock raw materials used in the past: mineralogy, petrography, geochemistry and provenance of raw materials.

4. Environmental and anthropogenic factors impact to the state of preservation of mineral and rock historical objects.

5. Presentation of selected research and measurement methods used in archaeology and conservation; methods of sampling from historical objects and buildings.

6. Presentation of selected methods of conservation of mineral and rock historical objects.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
final test	51.0%	100.0%

Recommended reading	Basic literature	Antonelli F., Lazzarini L. 2015. An updated petrographic and isotopic reference database for white marbles used in antiquity. Rendiconti Lincei volume 26, p. 399413 Bahn P.G., Renfrew C. 2002. Archeologia. Teorie, metody, praktyka. Prószyński i Spółka, Warszawa Barnett J.R. Miller S., Pearce E. 2006. Colour and art: A brief history of pigments. Optics & Laser Technology 38: 445-453 Doehne E., Price C.A. 2010. Stone Conservation. An Overview of Current Research. The Getty Conservation Institute. Los Angeles. Domasłowski W. (ed.) 2011. Zabytki kamienne i metalowe, ich niszczenie i konserwacja profilaktyczna. Wydawnictwo naukowe UMK. Toruń. Herz N., Garrison E.G.1998. Geological Methods for Archaeology, Oxford. Michalska D., Szczepaniak M. (eds.) 2014. Geosciences in Archaeometry. Methods and case studies. Bogucki Wydawnictwo Naukowe, Poznań Quinn S.P. 2013. Ceramic Petrography: The Interpretation of Archaeological Pottery & Related Artefacts in Thin Section. Archaeopress Archaeology, Oxfordshire. Weiner S., 2010: Microarchaeology. Beyond the Visible Archaeological Record. Cambridge University Press.
	Supplementary literature	Publications from specialist journals, e.g. Archaeometry, Geochronometria, Journal of Archaeological Science, Journal of Conservation Science, Journal of Cultural Heritage, Radiocarbon
	eResources addresses	
Example issues/ example questions/ tasks being completed	methods for determining the provenance of marbles used in ancient sculpture the influence of water-soluble salts on the state of preservation of stone monuments	
Work placement	Not applicable	

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