University of Gdańsk

Subject card

Subject name and code	Field classes - Geology of coastal zone I, PG_00199148		
Field of study	Geology		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2027/2028
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	2	Language of instruction	Polish
Semester of study	4	ECTS credits	5.0
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 Ewa Szymczak	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	45.0	0.0	0.0	0.0	45

E-learning hours included: 0.0

Additional information:
- Field excercises
- Research vessel cruise
- Individual and group work
- Case study analysis
- Discussion
- Measurements
- Geological analyses and report

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	5.0	75.0	125

Subject objectives

The classes include an analysis of the geological structure and geomorphology of the southern Baltic coast based on selected field sites. During the exercises, students become familiar with landforms formed by glacial, fluvioglacial, marine, and aeolian processes. Particular attention is given to the morphology of cliffs, spits, and dune systems. Students carry out basic field measurements, document geological exposures, and analyse processes of erosion and sediment accumulation in the coastal zone. They also learn methods of conducting geological research on board a research vessel.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[GEOLL3_W05] knows the structure and geological development of selected regions in Poland and in the world	The student knows the geological structure and the development history of selected sections of the southern Baltic coast	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report [SW3] text preparation/written work
[GEOLL3_W04] knows and understands phenomena and processes occurring in the past and today in the interior of the Earth and on its surface, defines the methods of how to study them	The student knows the geomorphological processes occurring in the coastal zone and the methods used to investigate them in the field.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report
[GEOLL3_U05] can reconstruct the history of geological development of selected regions in Poland and in the world on the basis of maps, cross-sections and exposures in the field	The student is able to interpret the geological development of selected sections of the southern Baltic coast based on field observations and cartographic data	[SU3] text preparation/written work [SU4] test/exam - oral or written [SU6] demonstration of practical skills
[GEOLL3_U01] is able to apply basic measurement and analytical techniques in the field and in the laboratory, plans to conduct research and measurements	The student is able to perform basic field measurements, document geological exposures and prepare lithological descriptions of sediments	[SU3] text preparation/written work [SU6] demonstration of practical skills [SU8] observation of student's independent or team work
[GEOLL3_U06] is able to identify geological objects and combine them with geological processes and anthropogenic environmental transformations	The student is able to identify landforms and relate them to marine, glacial and aeolian processes.	[SU1] oral statement/conversation/ discussion [SU3] text preparation/written work [SU4] test/exam - oral or written [SU8] observation of student's independent or team work
[GEOLL3_W07] knows the anthropogenic transformation of the natural environment, including the effects of the exploitation of mineral resources	The student knows examples of anthropogenic transformations of coastal environments and their impact on coastal dynamics	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion
[GEOLL3_K05] is willing to comply with the principles of occupational safety and health, takes care of specialized equipment entrusted to them, is aware of the risk connected with the performed work	The student is ready to follow health and safety regulations during fieldwork and to properly use field equipment	[SK6] demonstration of practical skills [SK8] observation of student's independent or team work
[GEOLL3_U10] is able to work individually and cooperate in laboratory and field groups performing various functions in them and performing various tasks	The student is able to cooperate in field teams while conducting measurements, beach profiling, documenting geological exposures, and collecting bottom sediment samples from a research vessel	[SU1] oral statement/conversation/ discussion [SU3] text preparation/written work [SU8] observation of student's independent or team work

Subject contents

SITES

Rewa Mrzezino Osłonino Rzucewo Półwysep Helski Jastrzębia Góra Chłapowo Rozewie Żarnowiec Słowiński Park Narodowy - Zatoka Pucka (vessel)

1. Geological structure of the Kashubian Coast and the origin of its post-glacial relief.
2. Morphology and dynamics of coastal cliffs (Osłonino Cliff, Jastrzębia Góra Cliff).
3. Stratigraphy and lithology of Quaternary sediments in cliff exposures.
4. Processes of coastal erosion (abrasion) and mass movements in the cliff zone.
5. Origin and development of the Hel Peninsula as an accumulative landform.
6. Morphogenesis of the Reda-Łeba ice-marginal valley and its role in the regional hydrological system.
7. Geological structure of the moraine plateau in the Żarnowiec area.
8. Origin and development of dune systems in Słowiński National Park.
9. Influence of climatic and hydrodynamic factors on the development of the southern Baltic coast.
10. Methods of coastal protection based on selected sections of the coastline.
11. Beach morphology and beach profiling.
12. Coastal sediments and their characteristics.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
worksheets	51.0%	25.0%
written assessment	51.0%	75.0%

Recommended reading	Basic literature	Basiński T., Pruszak Z., Tarnowska M., Zeidler R. 1993. Protection of seashores. Published by IBW PAN, Gdańsk Jurys. L, Kaulbarsz D., Koszka-Maroń D., Zaleszkiewicz L. 2008. Baltic cliffs and much more, Przeg. Geol. 56 Łęczyński L., Szymczak E., 2010. Physical properties of bottom sediments. [in:] J. Bolałek (ed.) Physical, biological and chemical studies of marine bottom sediments. UG Masłowska M., Olszak I.J., Jurys L., Michałowska M. 2003. Geological structure, stratigraphy and palaeogeography of sediments of the southern part of the Osłoninski Cliffs, Geology and Geomorphology, 5 Pędziński, J., Szymczak, E. (2020). Macroscopic description of marine bottom sediments. In: E. Szymczak (ed.), *Fundamentals of Interdisciplinary Research of the Baltic Sea: Coursebook for Undergraduate Students of Oceanography*. University of Gdańsk Press, Gdańsk, pp. 8693. Petelski K. 1989. Morphogenesis of the Reda-Łeby proglacial valley and its relationship to the Żarnowieckie Lake trough, Stud. i Mat. Oceanol. 56 Rotnicki K. Identification, age and causes of Holocene ingressions and regressions of the Baltic Sea on the Polish central coast. Wydawnictwo Słowińskiego Parku Narodowego, Smołdzino. Skompski S. 1989. Morphogenesis and age of the Kashubian Coast, Stud. i Mat. Oceanol. 56 Szymczak Ewa, Rucińska Maria, Characteristics of morphodynamic conditions in the shallows of Puck Bay (southern Baltic Sea) , Oceanological and Hydrobiological Studies, 2021, vol. 50, nr 2, s. 220-231. Przejdź do dokumentu po identyfikatorze cyfrowymDOI: 10.2478/oandhs-2021-0019 Szymczak, E., Rucińska, M., Szmytkiewicz, A. **Surface sediments of the Puck Bay**. In: J. Bolałek, D. Burska (eds.), *Puck Bay*, vol. 1: *Geological and Physical Aspects*. Gdańsk: University of Gdańsk Press, 2022, pp. 265279. ISBN 978-83-8206-232-8. Szymczak, E., Szmytkiewicz, A. **Contemporary sedimentary processes in the Puck Bay**. In: J. Bolałek, D. Burska (eds.), *Puck Bay* , vol. 1: *Geological and Physical Aspects*. Gdańsk: University of Gdańsk Press, 2022, pp. 255264. ISBN 978-83-8206-232-8. Tylmann, K., Szymczak, E., Rucińska, M. **Types of coasts of the Puck Bay**. In: J. Bolałek, D. Burska (eds.), *Puck Bay*, vol. 1: *Geological and Physical Aspects*. Gdańsk: University of Gdańsk Press, 2022, pp. 280291. ISBN 978-83-8206-232-8. Zaleszkiewicz L., Koszka-Maroń D. 2005. Processes activating the degradation of the cliff coast of the Puck Bay, Przeg. Geol. 53

	Supplementary literature	Czarnogórska M., Graniczny M., Uścinowicz Sz., Nutricato R., Triggiani S., Nitti D.O., Bovenga F., Wąsowski J. 2012. Analysis of surface deformations along the south-western coasts of the Gulf of Gdańsk using satellite interferometric data, Przeg. Geol. 60 Kramarska R. 2002. Tertiary in the coastal zone between Jastrzębia Góra and Władysławowo, Guidebook of the LXXIII Congress of the Polish Geological Society. Marzec M., Woźny E. 1972. Lithology and stratigraphy of Tertiary formations in the vicinity of Jastrzębia Góra near Puck, Przeg. Geol. 12 Olszak J. 1998. Chronostratygraphy of the western part of the cliff of Kępa Swarzewska near Jastrzębia Góra (Baltic Coast). In: Gołębiewski R. (ed.) Peribalticum VII, GTN. Sierżęga P. 2002. Hydrogeological conditions in the area of Żarnowieckie Lake, Guidebook of the LXXIII Congress of the Polish Geological Society (PTG). Subotowicz W. 1980. Geodynamics of cliff shores of the Gdańsk region. In: Rosa B. (ed.) Peribalticum. Problemy badawcze obszaru bałtyckiego, GTN, Gdańsk. Tomczak A. 2005. Stan i zagrożenia Półwyspu Helskiego. Selected issues from the geological past and future of the Hel Peninsula. GTN Gdańsk
	eResources addresses	
Example issues/ example questions/ tasks being completed	Based on the attached geological cross-sections, describe similarities and differences in the geological structure of the Reda-Leba proglacial valley and the Kashubian Meander.	
Work placement	Not applicable	

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