COURSE UNIT (MODULE) DESCRIPTION

Course unit (module) title	Code
Coastal Morphology and Processes	

Lecturer(s)	Department(s) where the course unit (module) is delivered
Coordinator: **assoc. prof. Donatas Pupienis** **Other(s):**	Department of Hydrology and Climatology Institute of Geosciences Faculty of Chemistry and Geosciences

Study cycle	Type of the course unit (module)
Last year of first cycle / Second cycle	Compulsory

Mode of delivery	Period when the course unit (module) is delivered	Language(s) of instruction
Face-to-face	Autumn (I semester)	English

Requirements for students	
Prerequisites: none	**Additional requirements (if any):** none

Course (module) volume in credits	Total student's workload	Contact hours	Self-study hours
5	**133**	**48**	**85**

Purpose of the course unit (module): programme competences to be developed		
The course will apply a process geomorphological approach to understand coastal behaviour, focusing on the origin/evolution of coastal landforms and the physical processes responsible for their creation and modification, especially dynamic sand-dominated systems. The main topics will cover: geomorphic classification of coasts, sediment description and analysis, sea level fluctuation, tides, generation and transformation of waves, wave breaking, nearshore currents, cross-shore and alongshore sediment transport, coastal morphodynamics, and human-coastal interactions.		
Learning outcomes of the course unit (module)	**Teaching and learning methods**	**Assessment methods**
– will be able to understand basic processes operating along the coast (e.g. waves, tides, currents, and sea-level rise). – will be able to characterize the dynamics of the shoreface and beaches including coastal sediment transport and deposition, and coastal erosion. – will be able to perform: critical analyse of a problem, and presentation/discussion of a problem	Lectures, seminars, self-study.	Seminars and presentation, quizzes every second week

Content: breakdown of the topics	Contact hours							Self-study work: time and assignments	
	Lectures	Tutorials	Seminars	Exercises	Laboratory work	Internship/work placement	**Contact hours**	**Self-study hours**	**Assignments**
Introduction. Coastal geomorphology.	6						**6**	**10**	Self-study of

Terminology. Ancient coastlines. Coastline morphology. Coastline length. Coastal evolution. Changing coastlines.									mandatory material. There are mandatory and recommended readings in the course. Most of the material for the course will be available on Vilnius University Virtual Learning Environment system. The student will be required to assimilate the mandatory readings and material for assignments.
Coastal system. Morphodynamic approach and behaviour of coastal systems. Long term change of coastal systems.	6						**6**	**10**	
Coastal classification. Submerged coasts. Emerged coasts. Primary coasts. Secondary coasts. Embayed coasts. Deltas. Estuaries. Barriers. Rocky coasts. Coral reefs and islands.	6						**6**	**10**	
Coastal processes. Sea level. Waves. Tides. Storm surges. Tsunamis. Currents. Wind action.	6						**6**	**10**	
Coastal sediment transport. Alongshore cross-shore sediment transports. Cross-shore sediment transports**.** Nearshore processes. Sediment transport, sorting, accumulation, differentiation. Littoral drift. Benthic boundary layers. Bed forms.	6						**6**	**10**	
Coastal landforms. Beaches. Barriers and related accumulation features. Dunes. Formation and evolution of coastal landforms. Equilibrium profile.	6						**6**	**11**	
Coasts and climate. Zonal climates, coastal processes and geomorphology. Climate variability over decadal to seasonal time scales. Climate impact on coastal zone.	6						**6**	**12**	
Human impact on the coast. Harbours impact on adjacent coast stretch. Shore protection and coastal engineering. "Hard" and "soft" engineering: sea walls, embankments, groins, breakwaters. Beach nourishment, dune construction.	6						**6**	**12**	
Total	**48**						**48**	**85**	

Assessment strategy	**Weight,%**	**Deadline**	**Assessment criteria**
Quizzes	40	During the semester	The quizzes are valued 5 points. (8 quizzes will be offered every second week; each quizzes comprise of 4-5 open questions) 5 points - quizzes done well. The questions answered correctly. 2.5 points - quizzes performed defective. The questions answered incorrectly. 0 points - quizzes is missing or incorrect. The questions are not answered. The maximum number of points – 40.
Seminars (Presentations of the problem on seminars).	60	During the semester	Each student makes presentation (during the semester 8 presentations). 7.5 point. The presentation is high quality and comprehensive. Student clearly understands presented problem. They can answer questions from audience and participate in discussion. 3.75 point. The presentation is superficial or not well prepared or student not fully understands the problem. 0 points. The presentation is not demonstrated or is low quality. The maximum number of points – 60.
Final grade	100		Final grade is the sum of seminars and quizzes scores. 100-91 points – 10; 90-81 points – 9; 80-71 points – 8; 70-61 points – 7, 60-51 points – 6, 50-41 points – 5; 40-31 points – 4; 30-21points – 3; 20-11points – 2; 10-1 points – 1.

Author	**Year**	**Title**	**Issue of a periodical or volume of a publication**	**Publishing place and house or web link**

Mandatory reading				
Davidson-Arnott, R., Bauer, B., & Houser, C.	2019	Introduction to Coastal Processes and Geomorphology	2nd ed.	Cambridge University Press. doi:10.1017/9781108546126
Woodroffe C.D.	2002	Coast: form, process and evolution.		Cambridge university Press.
Optional reading				
Schwartz. M. L. (ed.)	2005	Encyclopedia of Coastal Science.		Springer Verlag.