

Subject card

Subject name and code	Non-native species in the marine environment - lecture, PG_00117734						
Field of study	Oceanography						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2026/2027		
Education level	Master's studies		Subject group		Obligatory subject group in the field of study Optional subject group 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	2		Language of instruction		Polish		
Semester of study	3		ECTS credits		1.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Laboratory of Ecophysiology and Bioenergetics -> Department of Marine Ecology -> Faculty of Oceanography and Geography -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. Monika Normant-Saremba				
	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		2.0		10.0	27
Subject objectives	Raising knowledge about alien species in marine ecosystems, with particular emphasis on their impact on biodiversity and ecosystem services, both on a local and global scale.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[OCEANMU2-W04] knows and understands the latest research trends in the field of oceanography as well as the possibilities of practical application of scientific achievements		Knows and understands in-depth the latest research trends related to the introduction of alien species into the marine environment, as well as the possibilities of practical application of scientific achievements.		[SW4] test/exam - oral or written		
	[OCEANMU2-W07] knows and understands legal regulations, principles of sustainable development of the marine environment, its protection and management of the marine environment and its resources		Knows and understands the basic legal regulations regarding alien species and methods of dealing with them in order to protect and manage the marine environment and its resources.		[SW4] test/exam - oral or written		
	[OCEANMU2-W06] knows and identifies potential threats to the marine environment on a local and global scale resulting from strong anthropopressure, predicts their effects on various time and space scales		Knows and identifies potential threats to the marine environment on a local and global scale resulting from the introduction of alien species, and predicts their effects.		[SW4] test/exam - oral or written		

Subject contents	Lectures will include the following topics: Terminology and legal aspects (national, regional, EU and international regulations); Pathways/vectors of introduction of alien species into the marine environment; Examples of the most invasive alien species in the marine environment; The Baltic Sea as a sea of alien species; Factors determining the success of introduction and the establishment of an alien species outside native range; Effects on biodiversity and related ecosystem services resulting from the introduction of alien species; Management of alien species.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Test/ exam	51.0%	100.0%
Recommended reading	Basic literature	Głowaciński Z., Okarma H., Pawłowski J., Solarz W. (red.), 2011. Gatunki obce w faunie Polski. Instytut Ochrony Przyrody PAN, Kraków. Keller R.P., Lodge D.M., Lewis M.A., Shogren J.F., 2009. Bioeconomics of Invasive Species. Oxford University Press. Leppäkoski E., Gollasch S., Olenin S. (eds), 2002. Invasive Aquatic Species of Europe. Distribution, Impacts and Management. Kluwer Academic Publishers, The Netherlands. Rilov G., Crooks J.A. (eds), 2009. Biological Invasions in Marine Ecosystems. Ecological, Management, and Geographic Perspectives. Springer-Verlag Berlin Heidelberg , ISBN: 978-3-540-79235-2, 641 pp. Ruiz G.M., 2003. Invasive Species : Vectors and Management Strategies. Island Press.	
	Supplementary literature	Lockwood J.L., Hoophes M.F., Marchetti M.P., 2007. Invasion Ecology. 4th Edition. Blackwell Publishing.	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Alien species, invasive alien species and naturalized species, primary and secondary introduction, invasion process model, international conventions and guidelines and EU directives, monitoring and early detection, methods of removing alien species from the environment, control and management, alien species in aquaculture and their use by humans, the hundred most invasive species in the world, impact on biodiversity and human economy, alien species in the Baltic Sea and their origin.		
Work placement	Not applicable		

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