

Subject card

Subject name and code	Ecophysiology of marine plants - laboratory exercises, PG_00117721						
Field of study	Oceanography						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2024/2025		
Education level	postgraduate studies	Subject group			Obligatory subject group in the field of study		
Mode of study	full-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			Polish Classes may also be conducted in English.		
Semester of study	2	ECTS credits			3.0		
Learning profile	academic	Assessment form					
Conducting unit	Katedra Funkcjonowania Ekosystemów Morskich -> Faculty of Oceanography and Geography						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Filip Pniewski				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	0.0	0.0	30
	E-learning hours included: 0.0						
	Additional information: Designing experiments Performing experiments						
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	30		10.0		50.0	90
Subject objectives	To familiarize students with basic analytical and measurement techniques used in the study of photosynthetic organisms. To develop in students the ability to plan experiments and interpret the results.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[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 understands to an in-depth degree the basic and advanced techniques, research methods and statistical tools used to describe and interpret the phenomena and processes resulting from the interaction of environmental factors and those resulting from anthropopression on the physiological processes of algae (curriculum content: 1-7)	[SW4] test/exam - oral or written [SW2] presentation/project/paper/report
	[OCEANMU2-U03] can plan and carry out independently advanced research and measurements, both in field and laboratory, using appropriately selected measurement and analytical techniques in the field of oceanography, adequately to the studied specialty and research problem	Student is able to independently plan and carry out laboratory tests and measurements regarding algal physiology, using appropriately selected methods and analytical techniques, adequately to the considered research problem (curriculum content: 1-7)	[SU8] observation of student's independent or team work
	[OCEANMU2-K05] is ready to follow the rules occupational health and safety, taking care of the entrusted person specialized and recognition equipment emergency situations and take appropriate action activities	Student is ready to comply with the rules of safety and hygiene of work in the physiological laboratory, takes care of the specialized equipment entrusted to a student and recognizes hazardous situations when working with reagents and equipment used in the study of marine plant physiology (curriculum content: 8)	[SK8] observation of student's independent or team work
[OCEANMU2-K04] is ready to critically evaluate his/her knowledge and received content in the field of natural sciences in particular in the field of the studied specialty, a in problematic situations, supports oneself with knowledge experts	Student is ready to critically evaluate his/her knowledge and received content in the field of ecophysiology of marine algae in problematic situations (curriculum content: 1-7)	[SK2] presentation/project/paper/report [SK4] test/exam - oral or written	
Subject contents	<ol style="list-style-type: none"> 1. The growth rate of marine algae, plotting the growth curve of algae in laboratory culture and determining the growth phases of algae 2. characterization of the effect of selected environmental factors (salinity, nutrients) on algal growth. 3. Measurements of chlorophyll a fluorescence. 4. Measurements of photosynthesis and dark respiration in marine algae. 5. Identification of photoadaptive mechanisms of algae based on changes in photosynthetic light curves. 6. Spectrophotometric and chromatographic (HPLC) analysis of photosynthetic pigments. 7. Characterization of biochemical composition of algal biomass; determination of fatty acids content. 8. The basic principles of safety and hygiene of an oceanographer in the laboratory. 		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Observation of independent work of students.	100.0%	5.0%
	written report	51.0%	15.0%
tests (4x, 25 min)	51.0%	80.0%	
Recommended reading	Basic literature	<ol style="list-style-type: none"> 1. Gumiński Stefan - Fizjologia glonów i sinic - Wyd. Uniw. Wrocławskiego, Wrocław, 1990 2. Stryer Lubert - Biochemia, PWN, Warszawa, 1997 3. Larkum Anthony, Douglas Susan, Raven John (eds.) Photosynthesis in Algae, Springer Science+Business Media, LLC, 2003 4. Szewykowska Alicja Fizjologia roślin, 1997 	
	Supplementary literature	<ol style="list-style-type: none"> 1. Zurzycki Jan, Michniewicz Marian (eds.) - Fizjologia roślin, PWRiL, Warszawa, 19852. Gumiński Stefan - Fizjologia glonów i sinic - Wyd. Uniw. Wrocławskiego, Wrocław, 1990 2. Dera Jerzy - Fizyka Morza/Marine physics, PWN/Elsevier, Warszawa/Amsterdam, 1983/19922. Gumiński Stefan - Fizjologia glonów i sinic - Wyd. Uniw. Wrocławskiego, Wrocław, 1990 3. Czerwiński Witold - Fizjologia roślin, PWN, Warszawa, 1981 4. Gumiński Stefan - Fizjologia glonów i sinic - Wyd. Uniw. Wrocławskiego, Wrocław, 1990 5. Kreeb Karlheinz - Ekofizjologia roślin, PWN, Warszawa, 1979 	
	eResources addresses	Adresy na platformie eNauczanie:	

Example issues/ example questions/ tasks being completed	
Work placement	Not applicable

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