University of Gdańsk

Subject card

Subject name and code	Ecophysiology of Marine Plants - laboratory , PG_00204914		
Field of study	Oceanography		
Date of commencement of studies	October 2027	Academic year of realisation of subject	2027/2028
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	1	Language of instruction	Polish
Semester of study	2	ECTS credits	3.0
Learning profile	academic	Assessment form	credit
Conducting unit	Department of Marine Ecosystems Functioning -> Faculty of Oceanography and Geography -> Rector		
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						

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	35.0	75

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-K04] is ready to critically evaluate his/her knowledge and received content in the field of natural sciences in in particular in the field of the studied specialty, a in problematic situations, supports oneself with knowledge experts	Studentis 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
[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-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	Has an in-depth understanding of the impact of marine pollution on the physiological processes of algae and understands the consequences of this impact on natural algae communities (curriculum content: 1, 3, 4, 6)	[SW5] implementation of a problem task
[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

Subject contents

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
tests (3x, 25 min)	51.0%	80.0%
Observation of independent work of students.	51.0%	5.0%
written report	51.0%	15.0%

Recommended reading

Basic literature	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	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	

Example issues/ example questions/ tasks being completed

Work placement

Not applicable

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