University of Gdańsk

Subject card

Subject name and code	Research Planning and Data Analysis in Biological Oceanography II - laboratory , PG_00204918						
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		2.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Department of Marine Ecology -> Faculty of Oceanography and Geography -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Halina Kendzierska				
	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		2.0		18.0	50
Subject objectives	Knowledge development and understanding of (1) how to plan environmental, laboratory and survey studies in biological oceanography, (2) mathematical and statistical methods used to analyse results, (3) how to present results graphically and (4) how to interpret them.						

<table>
<tr><td>Learning outcomes</td><td>
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<tr><th>Course outcome</th><th>Subject outcome</th><th>Method of verification</th></tr>
<tr><td>[OCEANMU2-W09] knows and understands legal regulations regarding intellectual property rights and their application in scientific work</td><td>knows and understands the fundamental legal regulations on intellectual property rights and their application in scientific work.</td><td>[SW3] text preparation/written work</td></tr>
<tr><td>[OCEANMU2-U04] is ready to develop in an analytical and synthetic way
research and analysis results and based on them creating conclusions</td><td>is able to analytically and synthetically analyse the results of research, e.g. questionnaires and laboratory analyses, and to draw correct conclusions based on them.</td><td>[SU3] text preparation/written work</td></tr>
<tr><td>[OCEANMU2-U06] is able to use specialized computer software as well as advanced mathematical and statistical methods to analyze data and describe processes and phenomena occurring in the marine and coastal environment; evaluates their reliability and usefulness and performs critical analysis</td><td>is able to use specialised computer software, i.e. Primer, Statistica, QGIS in data analysis and description of phenomena and processes occurring in the marine environment and the coastal zone (curriculum content: B.1-7).</td><td>[SU3] text preparation/written work</td></tr>
<tr><td>[OCEANMU2-W05] knows and understands the principles of planning and conducting field and laboratory research as well as advanced methods and tools of scientific research, especially in the field of the studied specialty</td><td>knows and understands in detail the principles of planning and conducting research, including surveys, and the mathematical, statistical and IT methods and tools used in the field of marine biology.</td><td>[SW3] text preparation/written work</td></tr>
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<tr><td>Subject contents</td><td>B. Laboratory issues
B.1 Principles of planning environmental research, environmental and laboratory experiments and surveys.
B.2. Reliability in research and respect for intellectual property.
B.3. Principles of database preparation and processing capabilities.
B.4. Statistical analyses of the results of environmental studies, environmental and laboratory experiments (including standardisation, data normalisation and transformation, normality tests, parametric and non-parametric tests, correlation and regression, multivariate tables).
B.5 Principles of survey preparation and report of results.
B.6. Preparation and administration of a survey and preparation and presentation of a survey report.
B.7 Graphical representation, interpretation and drawing conclusions from analysed survey results.
B.8. Analysis and interpretation of marine assemblage data including cluster analysis, MDS multidimensional scaling, SIMPER analysis, PCA principal component analysis,
B.9. Map creation of study areas.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Test</td><td>51.0%</td><td>100.0%</td></tr>
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</td></tr>
<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>1.Clarke, K. R., Warwick, R. M., 2001. Change in marine communities: an approach to statistical analysis and interpretation, 2nd edition. PRIMER-E, Plymouth, 172 p.
2. Creswell, J.W., 2003. Research design: Qualitative, quantitative, and mixed methods approaches (3rd ed.). SAGE Publications, 260 p.
3. Krok E., 2015. Budowa kwestionariusza ankietowego a wyniki badań. Zeszyty Naukowe Uniwersytetu Szczecińskiego 874 , Studia Informatica 37, p. 55-73.
4. Towned J., 2002. Practical Statistics for Environmental and Biological Scientists. Wiley& Sons Ltd., 276 p.
5. Urbański J., 2008. GIS in environmental research (in Polish). Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk. 252 p.</td></tr>
<tr><td>Supplementary literature</td><td>-</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td></td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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