University of Gdańsk

Subject card

Subject name and code	Satellite Oceanography - laboratory classes , PG_00198884		
Field of study	Marine Hydrography		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2029/2030
Education level	Bachelor's studies	Subject group	Obligatory subject group in the field of study Optional subject group Subject group related to practical vocational preparation
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	4	Language of instruction	Polish
Semester of study	7	ECTS credits	2.0
Learning profile	practical	Assessment form	credit
Conducting unit	Laboratory of Physical Oceanography -> Department of Physical Oceanography and Climate Research -> Faculty of Oceanography and Geography -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Katarzyna Bradtke	
	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

Developing skills in utilizing satellite databases and processing and analyzing this data to obtain qualitative and quantitative information about processes occurring in the sea, as well as validating the obtained results.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[HML3-U11] is able to use navigation devices, means of technical observation and communication as well as measuring instruments, as well as apply in practice various techniques of measurement and observation in the field of professional activity related to the field of study	is able to use in practice satellite observation techniques and spatial data analysis tools in the professional activity of a hydrographer	[SU5] implementation of a problem task [SU8] observation of student's independent or team work
[HML3-W04] knows and understands, at an advanced level, the issue of measurements related to the exploration of sea basins and inland waters and tools allowing to describe, interpret and present the results of measurements	knows and understands at an advanced level the methods, techniques and research tools used in physical research of seas and oceans using satellite techniques	[SW2] presentation/project/paper/ report [SW5] implementation of a problem task
[HML3-W03] knows and understands, at an advanced level, directions of development and the latest discoveries in the field of scientific disciplines forming the theoretical basis appropriate to the field of study	knows and understands the directions of development and the latest discoveries in the use of satellite observation techniques and image analysis in marine hydrography	[SW2] presentation/project/paper/ report [SW5] implementation of a problem task

<table>
<tr><td>Subject contents</td><td>1. Satellite Data Sources and Formats

2. Data Acquisition and Preprocessing

3. Visualization and Analysis of Physical Parameters

4. Satellite Data Validation in Hydrodynamic Models (Altimetry and Passive Microwave Remote Sensing)

5. Identifying and Characterizing Marine Phenomena Using Satellite Data, e.g. sea ice extent and type in polar regions, river influence in estuaries, oil spill monitoring and other oceanographic features</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Knowledge of the fundamentals of physical oceanography, basics of remote sensing, and GIS. Proficiency in working within a Windows environment, and familiarity with ArcGIS Pro.</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></td><td>50.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td>Recommended reading</td><td><table><tr><td>Basic literature</td><td>• Robinson I., 2010. Discovering the Oceans from Space: The unique applications of satellite oceanography, Springer-Verlag, Berlin and Heidelberg
• Emery W., Camps A., 2017, Introduction to Satellite Remote Sensing. Atmosphere, Ocean, Land and Cryosphere Applications, Elsevier</td></tr><tr><td>Supplementary literature</td><td>• Berizzi F., Martorella M., Giusti E., 2016, Radar Imaging for Maritime Observation, CRC Prss, Taylor & Francis Group 348 s.
• Martin S., 2004, An introduction to Ocean Remote Sensing, Cambridge University Press, 426 s.
• Chapman R., Gasparovic R., 2022, Remote sensing physics: an introduction to observing earth from space, Wiley, Hoboken USA, 468 ss.
• Chang N.-B., Bai K., 2018, Multisensor data fusion and machine learning for environmental remote sensing, CRC Press, Boca Raton, 508 ss.</td></tr><tr><td>eResources addresses</td><td></td></tr></table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>Credit based on the results of the work done during the exercises and reports with the elaboration of these results (student's own work). Assessment criteria:

• ability to use satellite databases,
• ability to use software for analyzing satellite and GIS data in practice,
• ability to interpret the results of satellite data analysis.</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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