University of Gdańsk

Subject card

Subject name and code	Introduction to Satellite Remote Sensing - lecture, PG_00205346		
Field of study	Oceanography		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2028/2029
Education level	Bachelor'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	3	Language of instruction	Polish
Semester of study	5	ECTS credits	1.0
Learning profile	academic	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	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	1.0	9.0	25

Subject objectives

Familiarizing students with

- basic concepts in the field of satellite remote sensing,
- physical basis of remote sensing of the marine environment and coastal zone using devices recording electromagnetic radiation,
- satellite missions and devices used in Earth observations,
- the specificity of satellite data and their processing

Learning outcomes

Course outcome	Subject outcome	Method of verification
[OCEANL3-W01] has an advanced knowledge and understanding of the terminology used in oceanography and related exact and natural sciences (in Polish and a selected foreign language)	The student knows and understands at an advanced level the terminology used in satellite remote sensing, the physical basis of satellite remote sensing of the marine environment and the coastal zone, as well as the processes that can be studied remotely using devices recording electromagnetic radiation.	[SW4] test/exam - oral or written
[OCEANL3-W05] has an advanced knowledge of techniques, research methods, and tools (mathematical, statistical, and computational) used by oceanographers to describe and interpret processes and phenomena occurring in the marine environment	The student has advanced knowledge of research techniques and methods used in the work of an oceanographer to describe and interpret processes and phenomena occurring in the marine environment using data	[SW4] test/exam - oral or written

<table>
<tr><td>Subject contents</td><td>1. Physical basis of satellite remote sensing - electromagnetic radiation, basic concepts of satellite remote sensing

2. Satellite orbits and systems used in Earth observations, image resolution

3. Passive recording techniques in various spectral ranges

- sensors' types

- features of images

- surface phenomena and properties affecting the recorded signal, limitations

4. Imaging geometry, geolocation, data processing steps

5. Sources of satellite data and examples of their applications in marine research</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>knowledge of physics within the scope of the "Physics for Oceanographers" course, knowledge of the basics of physical, chemical and biological oceanography</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></table></td></tr>
<tr><td>Recommended reading</td><td><table><tr><td>Basic literature</td><td>1. Hejmanowska B., Wężyk P. (ed.), Dane satelitarne dla administracji publicznej, Polska Agencja Kosmiczna 2020; https://polsa.gov.pl/wp-content/themes/polsa/files/Podrecznik.pdf
2. 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>1. Martin S., 2014, An introduction to ocean remote sensing. Wydanie drugie. Cambridge University Press
2. Robinson I.S., 2004, Measuring the oceans from space : the principles and methods of satellite oceanography, Springer
3. Emilio Chuvieco, 2016, Fundamentals of Satellite Remote Sensing, CRC Press
4. Adamczyk J., Będkowski K., 2007, Metody cyfrowe w teledetekcji. Wyd. SGGW, Warszawa</td></tr><tr><td>eResources addresses</td><td></td></tr></table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>Assessment criteria:

• understanding basic concepts in the field of satellite remote sensing
• understanding the physical basis of remote sensing and knowledge of processes occurring in the marine environment that can be studied remotely using devices recording electromagnetic radiation
• knowledge of satellite recording techniques, their possibilities and limitations
• knowledge of satellite data processing steps</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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