University of Gdańsk

Subject card

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Subject name and code | Non-invasive methods of seabed surveys - exercises, PG_00091123 | | | | | | |
| Field of study | Geology | | | | | | |
| Date of commencement of studies | October 2024 | | Academic year of realisation of subject | 2026/2027 | | | |
| Education level | Bachelor's 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 | 3 | | Language of instruction | Polish | | | |
| Semester of study | 6 | | ECTS credits | 2.0 | | | |
| Learning profile | academic | | Assessment form | credit | | | |
| Conducting unit | Department of Geophysics -> Faculty of Oceanography and Geography -> Rector | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | prof. dr hab. Jarosław Tęgowski | | | | | |
| | Teachers | | | | | | |

**Lesson types**

| Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|
| Number of study hours | 0.0 | 0.0 | 15.0 | 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 | 15.0 | 20.0 | 50 |

**Subject objectives**

To learn and understand the mechanism of interaction of acoustic waves with the seabed and methods of investigating the seabed using hydroacoustic, laser, gravimetric and magnetometric equipment.

**Learning outcomes**

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| [GEOLL3_U04] is able to use specialized computer software and mathematical and statistical methods in the analysis of geological data | is able to use dedicated computer software in the analysis of data obtained by non-invasive methods of seabed researchg | [SU4] test/exam - oral or written |
| [GEOLL3_W03] knows and identifies paleontological, mineralogical, petrographic and structural objects using appropriate methods | Knows and identifies structures in the structure of the seabed using appropriate methods | [SW4] test/exam - oral or written |
| [GEOLL3_W04] knows and understands phenomena and processes occurring in the past and today in the interior of the Earth and on its surface, defines the methods of how to study them | knows and understands the phenomena and processes occurring in the past and today on the seabed, defines the methods of their study | [SW4] test/exam - oral or written |
| [GEOLL3_U06] is able to identify geological objects and combine them with geological processes and anthropogenic environmental transformations | can identify geological objects on the seabed and connect them to geological processes and anthropogenic environmental transformations | [SU4] test/exam - oral or written |
| [GEOLL3_W02] knows and understands the terminology appropriate in science and natural sciences | knows and understands the terminology specific to non-invasive seabed surveying methods | [SW4] test/exam - oral or written |

<table>
<tr><td>Subject contents</td><td>Geophysical properties of bottom sediments.<br>Theoretical basis of acoustic wave propagation in the bottom.<br>Sources and receivers of acoustic signals.<br>Hydroacoustic equipment for bottom exploration.<br>Introduction to acoustic signal processing.<br>Acoustic classification of sediments.<br>Non-invasive seabed survey techniques (gravimetry, magnetometry, 3D laser scanner, underwater photography).<br>Organisation of non-invasive seabed surveys.</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>colloquium</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>Lurton X., 2002. An introduction to Underwater Acoustics. Principles and applications, Wyd. Springer<br>Stepnowski, A., 2001. Systemy Akustycznego Monitoringu Środowiska Morskiego, GTN, Gdańsk<br>Śliwiński A., 2001. Ultradźwięki i ich zastosowania, Wyd. Nauk.-Tech., Warszawa<br>Tęgowski J., 2006. Akustyczna Klasyfikacja Osadów Dennych, Wyd. Rozprawy i Monografie IO PAN<br>Blondel P., 2009. The Handbook of Sidescan Sonar, Springer<br>MacLennan D. N., Simmonds E. J., 2005. Fisheries Acoustics Theory and Practice, Blackwell Publishing Limited; 2 edition (September 1)</td></tr><tr><td>Supplementary literature</td><td>Medwin H., Clay C. S., 1998. Fundamentals of Acoustical Oceanography, Academic Press, Boston<br>Medwin H., 2005. Sounds in the Sea. From Ocean Acoustics to Acoustical Oceanography, Cambridge University Press, New York<br>Urick R. J., 1975. Principles of underwater sound, McGraw-Hill</td></tr><tr><td>eResources addresses</td><td></td></tr></table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>Geophysical properties of bottom sediments.<br>Theoretical basis of acoustic wave propagation in the bottom.<br>Sources and receivers of acoustic signals.<br>Hydroacoustic equipment for bottom exploration.<br>Introduction to acoustic signal processing.<br>Acoustic classification of sediments.<br>Non-invasive seabed survey techniques (gravimetry, magnetometry, 3D laser scanner, underwater photography).<br>Organisation of non-invasive seabed surveys.</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
</table>

Document generated electronically. Does not require a seal or signature.