Course
Specifications
Valid as from the academic year 2017-2018
In-situ and Remote Sensing Tools in Aquatic Sciences (C002470)

Course size

<table>
<thead>
<tr>
<th>Credits</th>
<th>Study time</th>
<th>Contact hrs</th>
</tr>
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<tbody>
<tr>
<td>5.0</td>
<td>150 h</td>
<td>50.0 h</td>
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</tbody>
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Course offerings and teaching methods in academic year 2017-2018

A (semester 2)
lecture 15.0 h
seminar: coached exercises 35.0 h

Lecturers in academic year 2017-2018

Ruddick, Kevin  VUB  lecturer-in-charge
Van Lancker, Vera  WE13  co-lecturer

Offered in the following programmes in 2017-2018

Master of Science in Marine and Lacustrine Science and Management

5  A

Teaching languages

English

Keywords

Marine Acoustics, Marine Optics, Remote Sensing, In-situ sampling, Water Column tools

Position of the course

Introduction to marine acoustics, optics and remote sensing, together with in-situ ground-truthing techniques and water column tools. Monitoring of the physical and biological environment.

Contents

Lectures give an introduction to marine acoustics, optics and remote sensing, together with in-situ ground-truthing techniques and water column tools. A historical perspective of the subjects and an outline of the applications that have stimulated progress will be given. Basic physical principles behind the techniques, and the data acquisition itself are provided. Acoustic backscattering will be discussed in view of estimating seafloor nature and dynamics. The theory of aquatics optics emphasizes on how the scattering and absorption properties of algal and non-algal particles affect the spectral reflectance measured by remote sensors (and the water colour perceived by human observers). Current remote sensing systems are summarized with discussion of sensor characteristics (spectral, spatial and temporal resolution), data quality and practical issues. Ground-truthing comprises both the sampling of bottom and suspended sediments. Case studies will emphasize on practical issues and will demonstrate also the restrictions of the applied techniques and methodologies. Future developments are outlined. The basic concepts of satellite data processing are described, including quality control. Practical exercises and field work will demonstrate the practicality of the course content. Demonstration on board of an oceanographic vessel is foreseen.

Initial competences

Basics in science.

Final competences

To have knowledge of available technology and applied strategies for observation and data collection in ocean and lake environments.

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment.
**Conditions for exam contract**

This course unit cannot be taken via an exam contract

**Teaching methods**

Lecture, seminar: coached exercises

**Learning materials and price**

Course notes, provided by the lecturers (either in printed or electronic form):
1. Copy of lecture slides;
2. Excel ocean colour model and practical exercise questions and answers;
3. References to text books;
4. Field work notes and questions.

**References**


**Course content-related study coaching**

Discussion sessions.

**Evaluation methods**

end-of-term evaluation and continuous assessment

**Examination methods in case of periodic evaluation during the first examination period**

Written examination with open questions, oral examination

**Examination methods in case of periodic evaluation during the second examination period**

Written examination with open questions, oral examination

**Examination methods in case of permanent evaluation**

Assignment

**Possibilities of retake in case of permanent evaluation**

examination during the second examination period is possible

**Extra information on the examination methods**

oral presentation

**Calculation of the examination mark**

(Approved)