Water and Land Interaction and Transformation (I002047)

From the academic year 2014-2015 up to and including the academic year 2015-2016

Course Specifications

Course size

<table>
<thead>
<tr>
<th>Credits</th>
<th>Study time</th>
<th>Contact hrs</th>
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<tbody>
<tr>
<td>4.0</td>
<td>108 h</td>
<td>24.0 h</td>
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</tbody>
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Course offerings in academic year 2015-2016

A (semester 1)

Lecturers in academic year 2015-2016

Chen, Margaret  VUB lecturer-in-charge

Offered in the following programmes in 2015-2016

| Master of Science in Physical Land Resources (main subject Land Resources Engineering) | 4 | A |

Teaching languages

English

Keywords

Land, water, wetland, reclamation, restoration, erosion, deposition, biofilm, hydrodynamics, sediment transport, contamination and pollution, mitigation, monitoring, flood defense, riverine, estuarine, coast.

Position of the course

This course identifies two strategic but opposite approaches to water and land interaction and transformation, namely wetland reclamation versus wetland restoration. It introduces the processes that characterize wetland areas of intimate interaction between aquatic and terrestrial ecosystems, and emphasizes on multidisciplinary approach including knowledge of sedimentology (e.g., erosion and deposition), biogeochemistry (e.g., biofilm effect on surface stabilization), and hydraulic engineering (e.g., hydrodynamics and sediment transport). The course presents not only general knowledge but also some useful techniques applicable to amelioration of limited land versus mitigation of degraded ecosystems and flood defense. It is aimed to offer a platform for students to develop independent problem solving skills related to reclamation, conservation, monitoring, and management of wetland for sustainability.

Contents

1. Overview of wetland classifications including characterizations, functions and strategies for alterations.
2. Wetland reclamation: purpose, processes, functions and values, planning and implementation, mitigation measure and monitoring.
3. Wetland restoration or creation: purpose, processes, functions and values, cumulative impacts and protection.
4. Monitoring and evaluation techniques, appreciate the diversity of science and engineering fields encompassed within wetland transformation.
5. Integrated exploration and societal implication, understand some environmental issues facing the world's wetlands.

Initial competences

basic knowledge in geology, chemistry, and biology

Final competences

Fundamental knowledge and understanding of the theory, methodology and current practices in managing and solving issues related to wetland resources.

Conditions for credit contract

This course unit cannot be taken via a credit contract

Conditions for exam contract

(Approved)
This course unit cannot be taken via an exam contract

**Teaching methods**
- Lecture, fieldwork, seminar, self-reliant study activities

**Learning materials and price**
- syllabus, course notes, powerpoint slides

**References**

**Course content-related study coaching**

**Evaluation methods**
- end-of-term evaluation and continuous assessment

**Examination methods in case of periodic evaluation during the first examination period**
- Open book examination, oral examination

**Examination methods in case of periodic evaluation during the second examination period**
- Open book examination, oral examination

**Examination methods in case of permanent evaluation**
- Assignment, report

**Possibilities of retake in case of permanent evaluation**
- examination during the second examination period is not possible

**Calculation of the examination mark**
- Students who eschew periodic and/or permanent evaluations for this course unit may be failed by the examiner.