Oceans & Lakes – study programme - guide for new students

1. Important notes
2. First master year - 1MA
3. Second master year - 2MA

1. Important notes:

Note 1:
- “1MA or 2MA”: signifies this course can be taken up in the 1st or the 2nd year (you are free to choose in which year)
- ‘1MA’: signifies this course must be taken up in the 1st year
- “2MA”: signifies this course must be taken up in the 2nd year

Note 2:
- enrollment for year courses must be done in the 1st semester
- enrollment for 1st semester courses must be done in the 1st semester
- enrollment for 2nd semester courses must be done in the 1st semester, but can still be changed in the 2nd semester

Note 3:
you must reach a total of 60 ECTS per year, or 30 ECTS per semester. Small variations (under or over 60 ECTS/per year or 30 ECTS/semester) are allowed

2. First master year - 1MA

Compulsory courses in 1st year:

1st semester:
River & Lake Ecology – 5 ECTS (1MA)
Oceanography – 4 ECTS (1MA)
Estuarine and Coastal Systems – 5 ECTS (1MA)
Seminars: case studies – 3 ECTS - taught biennially in uneven years (1st + 2nd semester, year course) (1MA or 2MA)

2nd semester:
Law and Ethics on Conservation of Aquatic Systems – 3 ECTS (1MA)
In-situ and remote sensing tools in aquatic sciences – 5 ECTS (1MA)
Environmental Modelling – 3 ECTS (1MA)
Limnology – 5 ECTS (1MA)

Integrated Marine Coastal Ecology Field Course – 3 ECTS (1MA)

**Field course in 1st year:**

**2nd semester:**

Choice between:

- Integrated Field Course at Sea – 3 ECTS (1MA)
- Integrated Limnological Field Course – 3 ECTS - selection through motivation letter might be possible (1MA)
- Integrated Estuarine Field Course – 3 ECTS

**Broadening courses in 1st year:**

**1st semester:**

Governance and policy in development and cooperation Part I – 3 ECTS (1MA)

**Supporting courses in 1st and/or 2nd year** (please discuss first with Karolien Van Puyvelde, programme coordinator)

- Choose 9 ECTS in list of supporting courses
- All VLIR-UOS students must take “Introduction to Data Mining”
- All students must take either “Advanced Applied Statistics” or “Analysis of Biological Data”

**1st semester:**

- Introduction to Data Mining – 3 ECTS (1MA)
- Introduction to Marine and Lacustrine Biology - 3 ECTS (1MA)
- Conservation Genetics - 3 ECTS (1MA or 2MA)
- Analysis of Biological Data – 6 ECTS (1MA or 2MA)

**2nd semester:**

- Advanced Applied Statistics – 3 ECTS (1MA)
- Introduction to GIS – 3 ECTS (1MA or 2MA)
- Stable Isotope Geochemistry – 3 ECTS (1MA or 2MA)
- Biogeochemistry – 3 ECTS – taught biennially in even years (2MA)
Applied Geomorphology – 6 ECTS - taught biennially in uneven years (2MA)

Water Quality – 3 ECTS (2 MA)

Natural Risk Management – 3 ECTS (2 MA)

Methods of Scientific Diving – 3 ECTS (2 MA)

**Major 1 (Global Change Impacts on Ecology and Biodiversity) courses in 1st year:**

**1st semester:**

- Marine Food Web Ecology – 3 ECTS (1MA)
- Marine Extreme Systems – 6 ECTS (1MA or 2MA)

**2nd semester:**

- Ecology of Coastal Seas – 3 ECTS (1MA or 2MA)
- Lacustrine Systems – 3 ECTS (1MA or 2MA)

**Major 2 (Conservation Biology and Ecosystem Management) courses in 1st year:**

**1st semester:**

- Integrated Coastal Zone Management – 3 ECTS (1MA or 2MA)
- Conservation Genetics – 3 ECTS (1MA or 2MA)
- Environmental Impact Assessment – 3 ECTS (1MA or 2MA)
- Marine Fisheries Ecology and Management – 6 ECTS (1st + 2nd semester, year course) (1MA or 2MA)

**2nd semester:**

- Tropical Marine Ecology and Restoration - 3 ECTS (1MA or 2MA)

**Major 3 (Environmental Impact and Remediation) courses in 1st year:**

**1st semester:**

- Environmental Impact Assessment - 3 ECTS (1MA)
- Ecosystem based adaptation to Global Change - 6 ECTS (1MA or 2MA)

**2nd semester:**

- Physiology of Aquatic Organisms - 6 ECTS (1MA) - choice between “Physiology of Aquatic Organisms” (1MA) or “Global Change Physiology” (2MA) – see major 3, 2MA
Major 4 (Marine and Lacustrine Geosciences) courses in 1st year:

1st semester:
Paleoclimatology and Climate Change – 6 ECTS (1MA or 2MA)

3. Second master year - 2MA

Compulsory courses in 2nd year:

1st + 2nd semester:
Master Thesis – 30 ECTS (1st + 2nd semester, year course) (2MA)
Seminars: case studies – 3 ECTS - taught biennially in uneven years (1st + 2nd semester, year course) (1MA or 2MA)

Field courses in 2nd year:

2nd semester:
Choice between:
Monsoon School – 6 ECTS (2MA)
Summer School – 6 ECTS - summer school can already be completed in 1st year – enrollment for course only in 2nd year (2MA)
6 ECTS credits in courses at Belgian university (with link to Master Oceans & Lakes) (2MA)

Broadening courses in 2nd year:

2nd semester:
Internship – 6 ECTS - internship can already be completed in 1st year - enrollment for course only in 2nd year (2MA)
Governance and policy in development and cooperation Part II – 3 ECTS (2MA)

Supporting courses in 1st or 2nd year:

-Choose 9 ECTS in list of supporting courses
-All VLIR-UOS students must take “Introduction to Data Mining”
-All students must take either “Advanced Applied Statistics” or “Analysis of Biological Data”
1st semester:
Conservation Genetics - 3 ECTS (1MA or 2MA)
Analysis of Biological Data – 6 ECTS (1MA or 2MA)

2nd semester:
Introduction to GIS - 3 ECTS (1MA or 2MA)
Stable Isotope Geochemistry – 3 ECTS (1MA or 2MA)
Biogeochemistry – 3 ECTS – taught biennially in even years (2MA)
Applied Geomorphology – 6 ECTS - taught biennially in uneven years (2MA)
Water Quality – 3 ECTS (2 MA)
Natural Risk Management – 3 ECTS (2 MA)
Methods of Scientific Diving – 3 ECTS (2 MA)

Major 1 (Global Change Impacts on Ecology and Biodiversity) courses in 2nd year:

1st semester:
Marine Genomics – 3 ECTS (2MA)
Aquatic Microbial Ecology – 6 ECTS (2MA)
Marine Extreme Systems – 6 ECTS (1MA or 2MA)

2nd semester:
Ecology of Coastal Seas – 3 ECTS (1MA or 2MA)
Lacustrine Systems – 3 ECTS (1MA or 2MA)

Major 2 (Conservation Biology and Ecosystem Management) courses in 2nd year:

1st semester:
Integrated Coastal Zone Management – 3 ECTS (1MA or 2MA)
Conservation Genetics – 3 ECTS (1MA or 2MA)
Environmental Impact Assessment – 3 ECTS (1MA or 2MA)
Marine Fisheries Ecology and Management – 6 ECTS (1st + 2nd semester, year course) (1MA or 2MA)

Marine Biodiversity – 3 ECTS (2MA)

2nd semester:

Law of the Sea and Protection of the Oceans – 3 ECTS (2MA)

Tropical Marine Ecology and Restoration – 3 ECTS (1MA or 2MA)

**Major 3 (Environmental Impact and Remediation) courses in 2nd year:**

1st semester:

Global Change Physiology - 6 ECTS (2MA) - choice between “Physiology of Aquatic Organisms” (1MA) or “Global Change Physiology” (2MA) – see major 3, 2MA Aquatic Ecotoxicology and Environmental Monitoring

Ecosystem based adaptation to Global Change – 6 ECTS (1MA or 2MA)

Integrated Practicals – 3 ECTS (2MA)

**Major 4 (Marine and Lacustrine Geosciences) courses in 2nd year:**

1st semester:

Advanced Sedimentology – 6 ECTS (2MA)

Paleobiology of Micro-organisms – 6 ECTS (2MA)

Paleoclimatology and Climate Change (1MA or 2MA)

2nd semester:

Integrated Offshore Exploration – 6 ECTS (2MA)