

Aquatic Ecology (I001291)

Course size (nominal values; actual values may depend on programme)
 Credits 5.0 Study time 135 h Contact hrs 60.0 h

Course offerings and teaching methods in academic year 2018-2019

Offering	Language	Teaching Method	Hours
A (semester 1)	English	excursion	7.5 h
		practicum	5.0 h
		lecture	25.0 h
		guided self-study	5.0 h
		fieldwork	7.5 h
		group work	10.0 h

Lecturers in academic year 2018-2019

Janssen, Colin	LA22	lecturer-in-charge
Goethals, Peter	LA22	co-lecturer

Offered in the following programmes in 2018-2019

Programme	crdts	offering
Bachelor of Science in Environmental Technology	5	A
Master of Science in Aquaculture	5	A

Teaching languages

English

Keywords

Aquatic ecology, freshwater ecology, limnology, hydrobiology, materials budget, marine ecology, oceanography, systematics, pelagic environment, benthic environment, productivity, zonation

Position of the course

The partim Freshwater Ecology aims at providing students with the basic knowledge of the structure and the functioning of freshwater ecosystems. The abiotic (physical and chemical) characteristics of lakes and rivers, as well as the qualitative and quantitative composition of the different biological communities are reviewed. Major attention is paid to the materials budget of inland waters and to the interactions between the living and non-living components. The practical training includes qualitative and quantitative microscopical analysis of the major biological communities living in freshwater ecosystems (phyto-, and zooplankton, periphyton, macrobenthos).

The partim Marine Ecology aims at describing and illustrating the fundamental concepts and general processes governing marine ecosystems. In the theoretical course, the interactions between the abiotic factors and the structure and function of marine ecosystems are reviewed in detail. The practicals on the other hand are focussing on the systematics and auto- and synecology of the different groups of marine organisms. The practical exercises are supported by field excursions and case studies. The integration of the theoretical and practical aspects of marine ecology give the student an in-depth, experience-oriented knowledge of this scientific field.

Contents

Partim Freshwater ecology

- 1 Distribution, age and genesis of inland waters
- 2 Structure and physical properties of water
- 3 Associations of living organisms in inland waters
 - 3.1. Lakes, ponds, bogs
 - 3.2. Flowing waters
- 4 Materials budget of inland waters

- 4.1 Production, consumption and destruction
- 4.2. Materials transport and energy flux

Partim Marine ecology

- 1 General characteristics of the marine environment
- 2 Zonations in the marine environment
- 3 Physical factors
- 4 Chemical factors
- 5 Systematics of marine organisms
- 6 Ecology of pelagic communities
- 7 Ecology of benthic organisms
- 8 Synecology of the benthos
- 9 Productivity of marine ecosystems
- 10 Exploitation of marine systems - fisheries and aquaculture

Initial competences

General biology, general ecology

Final competences

- 1 Understanding the main theoretical processes driving ecosystem dynamics in aquatic ecosystems.
- 2 Based on this theoretical knowledge the student should be able to estimate possible consequences of human interactions in the different aquatic ecosystems.
- 3 Interpret, critically analyze and use scientific literature to discuss aquaculture issues related to aquatic ecology

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

Guided self-study, excursion, group work, lecture, practicum, fieldwork

Extra information on the teaching methods

Theory: oral presentations

Exercises: microscopical analysis of plankton samples, identification of marine organisms, field excursions and case studies

Groupwork: scientific report on an aquaculture issue related to aquatic ecology

Learning materials and price

A syllabus is available for both partims.

References

- J. Schwoerbel - *Handbook of limnology*. Ellis Horwood Ltd. Chichester (1984)
- R.G. Wetzel - *Limnology*. Saunders College Publishing. Forth Worth (1983)
- R. Barnes, *Invertebrate Zoology*, Saunders College Publishing (1986)
- J.W. Day et al, *Estuarine Ecology*, John Wiley and Sons (1989)
- H. Thurman and H. Weber, *Marine Biology*, Merrill Publ. Comp. (1984)

Course content-related study coaching

Discussions in group, forums in Minerva, guided exercises, contact hours for individual guidance upon request.

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, written examination with multiple choice questions

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

Written examination with open questions, written examination with multiple choice questions

Examination methods in case of permanent evaluation

Participation, assignment, report

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible

Extra information on the examination methods

Theory: period aligned evaluation

Exercises: non-period aligned evaluation

Groupwork: non-period aligned evaluation

Students who do not participate in the period aligned and/or non-period aligned evaluations may be failed for this course.

Theory: written (closed book) examination

Exercises: assessment of submitted report on the field excursions and case studies

Calculation of the examination mark

The examination consist of two partims: marine ecology and freshwater ecology. The final score for this course is calculated as the mean of the two partims (i.e. the two partims have an equal weight). In the scores for the individual partims both the theoretical exam and the practical exercises are taken into account (weight dependent on the partim).

Students who do not participate in the period aligned and/or non-period aligned evaluations may be failed for this course.