

Course Specifications

Valid in the academic year 2023-2024

Environmental Biotechnology (1002927)

Course size	(nominal values; actual values may depend on programme)				
Credits 7.5	Study time 200 h				
Course offerings in academic year 2023-2024					
A (semester 2)	English	Gent			
Lecturers in academic	vear 2023-2024				
Bakke, Ingrid TRONDHC				lecturer-in-charge	
Offered in the following programmes in 2023-2024				crdts	offering
International Master of Science in Health Management in Aquaculture				7.5	A
Teaching languages					
English					
Keywords					
Microbial metabol bioremediation.	ism, microbial ecology, basic pi	rocesses in waste-water ti	reatment,		
Position of the course					
The course is an in utilization of micr processes in wast microbial energy metabolism, micro microbiological	troduction to environmental bi obial e and water treatment, and bio bial growth kinetics and eleme	otechnology and focuses or remediation. Topics includ entary chemostat theory, r	on the led are relevant		
basic principles in bioremediation ar	d biological water and waste t	reatment.	ics, allu		
Contents					
The course include day excursion. Cor • attendance on e	s lectures, laboratory project, c npulsory xercises and laboratory project	alculatory exercises, and o will take place on schedu	one all- led		
exercise session • project takes pla at flexible times	s. The laboratory ice over a 5-6 weeks period, an	d requires more attendan	ce, but		
Initial competences					
Competence for a at UGent.	Imission to EM AquaH study pro	ogram and first semester	courses		
Final competences					
 By the end of th Classify microbe carbon source a according to ele electron donor u Apply Monods k growth rates, bi 	e course, the student should be s according to energy source and nd evaluate energy outcome of ctron acceptor and sage inetics and basic chemostat the omass yield, and substrate cond	able to: nd the energy metabolism eory to determine microbia centration and removal rai	əl te		
3 Carry out an exp ammonia remov 4 Describe suitab	periment with nitrification in a al e methods for characterizing t	continuous lab-scale biore he activity, function, divers	eactor for sity, and		

composition of microbial communities

- 5 Define basic concepts in microbial ecology, such as carrying capacity, succession, r- and K-selection, ecological niches
- 6 Outline the principles of methods for quantification of organic carbon in wastewater and calculate the theoretical oxygen demand (ThOD) for simple organic compounds
- 7 Explain the microbial processes and growth requirements undelaying the activated sludge process, nitrification, denitrification, enhanced phosphorus removal, and anaerobic digestion
- 8 Evaluate alternative process schemes for combined biological nutrient removal (BNR)
- 9 Describe the most commonly applied disinfection methods, and the steps typically involved in drinking water treatment process train
- 10 Evaluate the potential for biodegradation of organic pollutants, taking microbial and physical/chemical environments, as well as the chemical structure of the compound itself, into consideration

Conditions for credit contract

This course unit cannot be taken via a credit contract

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Lecture, Practical

Learning materials and price

Course material is specified at the beginning of the course.

References

Publications and books/chapters made available

Course content-related study coaching

PhD students acts as practical course advisers, support from a permanently employed engineer, guiding upon request, student advice on agreement

Assessment moments

continuous assessment

Examination methods in case of periodic assessment during the first examination period

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

Examination methods in case of permanent assessment

Oral assessment, Written assessment, Assignment

Possibilities of retake in case of permanent assessment

examination during the second examination period is possible

Extra information on the examination methods

The exam may be oral or written, announced in advance.

Calculation of the examination mark

The course will have an assessment with standard NTNU grades A-F Students who eschew period aligned and/or non-period aligned evaluations for this course unit may be failed by the examiner.