

## Ecotoxicology – Theory and Practice

Title	Ecotoxicology – Theory and Practice
Semester	F2023
Master programme in	Miljø biologi / Miljørisiko / Environmental Science
Type of activity	Course
Teaching language	English
Study regulation	Read about the Master Programme and find the Study Regulations at <a href="http://ruc.dk">ruc.dk</a> Læs mere om uddannelsen og find din studieordning på <a href="http://ruc.dk">ruc.dk</a>

### REGISTRATION AND STUDY ADMINISTRATIVE

Registration	<p>Sign up for study activities at <a href="#">stads selvbetjening</a> within the announced registration period, as you can see on the <a href="#">Studyadministration homepage</a>.</p> <p>When signing up for study activities, please be aware of potential conflicts between study activities or exam dates.</p> <p>The planning of activities at Roskilde University is based on the recommended study programs which do not overlap. However, if you choose optional courses and/or study plans that goes beyond the recommended study programs, an overlap of lectures or exam dates may occur depending on which courses you choose.</p>
Number of participants	<p>There is a maximum of 20 students at this course.</p> <p>Selection criteria: Drawing lots.</p> <p>The Master Programme/Institute reserves the right to cancel the course if fewer than 8 students are registered for the course.</p>
ECTS	10
Responsible for the activity	Henriette Selck ( <a href="mailto:selck@ruc.dk">selck@ruc.dk</a> ) Amalie Thit Bruus Jensen ( <a href="mailto:athitj@ruc.dk">athitj@ruc.dk</a> )
Head of study	Per Meyer Jepsen ( <a href="mailto:pmjepsen@ruc.dk">pmjepsen@ruc.dk</a> )
Teachers	
Study administration	INM Registration & Exams ( <a href="mailto:inm-exams@ruc.dk">inm-exams@ruc.dk</a> )
Exam code(s)	U60097

## ACADEMIC CONTENT

Overall objective

This course will provide students with an advanced knowledge of the theories and methods applied in modern ecotoxicology and risk assessment of chemical compounds. The theoretical part of the course includes subjects such as: the fate and toxic effects of chemicals in the environment (at molecular, cellular, individual, population, and ecosystem levels), how and why chemicals are regulated, how scientific principles are applied in risk assessment and regulation of chemicals. The practical (laboratory) part of the course provides students with hands-on experience with standard and non-standard methods used in modern ecotoxicology and provide skills to analyse and present data through the preparation of laboratory reports. The course contains lectures, classroom exercises, student presentations and laboratory work and a mini symposium where the results from the laboratory exercises are presented.

Detailed description of content

The course consist of a practical part (laboratory course) and a theoretical part.

The course provides knowledge of how contaminants are regulated and includes information on how scientific principles are applied in relation to risk assessment and regulation.

The course includes characterization of contaminants according to their physical and chemical characteristics, which affects their toxicity and environmental fate. Students learn about hazardous compounds and their impact at molecular, cellular, individual, population, community and ecosystem levels. The practical part of the course (laboratory course) gives students hands-on experience with standard and non-standard methods used in modern ecotoxicology.

Course material and Reading list

Text book supplementet with primary literature. Reading list will be available on Moodle.

Overall plan and expected work effort

This course is a 10 ECTS credit course (approximately  $\frac{1}{2}$  of the course is based on lectures and  $\frac{1}{2}$  a laboratory course). The expected student workload is ca. 270 hours.

About one third of these hours are contact hours while the remaining two thirds are meant for preparation, data-analysis and writing laboratory reports.

Thus, students are expected to spend at least 3-4 hours on preparation, data analysis or report writing for each 2-hour session.

The student is expected to attend laboratory exercises and lectures, since the exam addresses both the practical and the theoretical part of the course.

Format

Evaluation and feedback

The course includes formative evaluation based on dialogue between the students and the teacher(s).

Students are expected to provide constructive critique, feedback and viewpoints during the course if it is needed for the course to have better quality. Every other year at the end of the course, there will also be an evaluation through a questionnaire in SurveyXact. The Study Board will

handle all evaluations along with any comments from the course responsible teacher.

Furthermore, students can, in accordance with RUCs 'feel free to state your views' strategy through their representatives at the study board, send evaluations, comments or insights from the course to the study board during or after the course.

Programme

Programme will be available in Moodle later.

## ASSESSMENT

Overall learning outcomes

After completing the course, students will be able to:

- demonstrate knowledge of the fundamental theories and methods applied in modern ecotoxicology
- select examples and characterize contaminants and their potential sources, fates in the environment and their effect(s) on living organisms and biological systems (from molecular to ecosystem levels)
- analyze scientific literature on relevant test methods and endpoints including the significance of controllable laboratory conditions and environmental realism in ecotoxicological tests
- distinguish how the risk of different contaminants is assessed and regulated nationally and internationally
- work quantitatively with ecotoxicological data (e.g. construct and understand concentration-response curves, calculate LC50s and Risk Quotients)
- provide qualified estimates of the fate and effects of toxic compounds in different environments based on their chemical structure or physical-chemical properties
- design and conduct relevant ecotoxicological tests (both standard and non-standard tests) for a given compound, test-species and environmental compartment
- apply available information to interpret and assess the risks posed by toxic compounds to organisms
- undertake risk and hazard assessments of these compounds as well as be able to interpret and communicate relevant risk assessment results to other professionals and a broader public
- evaluate, interpret and communicate relevant laboratory results (written and orally).

Form of examination

Individual written invigilated exam

The duration of the exam is 4 hours.

Permitted support and preparation materials for the exam: Dictionaries and pocket calculator.

Assessment: 7-point grading scale.

Moderation: Internal co-assessor.

Form of Re-examination

Samme som ordinær eksamen / same form as ordinary exam

Type of examination in special cases

Examination  
and  
assessment  
criteria

The invigilated exam is based on questions addressing both the laboratory and the theoretical part of the course. Approximately 40% of the questions will address the laboratory part and 60% the theoretical part.

The questions contain a mix of calculation assignments, questions related to the laboratory work and questions addressing the theoretical course content.

Assesment criteria:

- demonstrate knowledge of the fundamental theories and methods applied in modern ecotoxicology
- select examples and characterize contaminants and their potential sources, fates in the environment and their effect(s) on living organisms and biological systems (from molecular to ecosystem levels)
- distinguish how the risk of different contaminants is assessed and regulated nationally and internationally
- work quantitatively with ecotoxicological data (e.g. construct and understand concentration-response curves, calculate LC50s and Risk Quotients)
- provide qualified estimates of the fate and effects of toxic compounds in different environments based on their chemical structure or physical-chemical properties
- design and conduct relevant ecotoxicological tests (both standard and non-standard tests) for a given compound, test-species and environmental compartment
- apply available information to interpret and assess the risks posed by toxic compounds to organisms
- undertake risk and hazard assessments of these compounds as well as be able to interpret and communicate relevant risk assessment results to other professionals and a broader public

Exam code(s)    Exam code(s) : U60097

Course days:

Hold: 1

## Ecotoxicology - Theory and Practice (ES)

time            06-02-2023 10:15 til  
                  06-02-2023 12:00

location    28b.0-01 - store teorirum (30)

Teacher    Henriette Selck ( selck@ruc.dk )  
                  Amalie Thit Bruus Jensen ( athitj@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 09-02-2023 10:15 til  
09-02-2023 12:00

location 28b.0-01 - store teorirum (30)

Teacher Henriette Selck ( selck@ruc.dk )  
Amalie Thit Bruus Jensen ( athitj@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 13-02-2023 10:15 til  
13-02-2023 12:00

location 28b.0-05 - lille teorirum (20)

Teacher Henriette Selck ( selck@ruc.dk )  
Amalie Thit Bruus Jensen ( athitj@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 16-02-2023 10:15 til  
16-02-2023 12:00

location 28b.0-01 - store teorirum (30)

Teacher Amalie Thit Bruus Jensen ( athitj@ruc.dk )  
Henriette Selck ( selck@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 20-02-2023 10:15 til  
20-02-2023 12:00

location 28b.0-05 - lille teorirum (20)

Teacher Henriette Selck ( selck@ruc.dk )  
Amalie Thit Bruus Jensen ( athitj@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 23-02-2023 10:15 til  
23-02-2023 12:00

location 28b.0-01 - store teorirum (30)

Teacher Henriette Selck ( selck@ruc.dk )  
Amalie Thit Bruus Jensen ( athitj@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 27-02-2023 10:15 til  
27-02-2023 12:00

location 28b.0-05 - lille teorirum (20)

Teacher Henriette Selck ( selck@ruc.dk )  
Amalie Thit Bruus Jensen ( athitj@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 02-03-2023 10:15 til  
02-03-2023 12:00

location 28b.0-01 - store teorirum (30)

Teacher Henriette Selck ( selck@ruc.dk )  
Amalie Thit Bruus Jensen ( athitj@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 06-03-2023 10:15 til  
06-03-2023 12:00

location 28b.0-05 - lille teorirum (20)

Teacher Henriette Selck ( selck@ruc.dk )  
Amalie Thit Bruus Jensen ( athitj@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 09-03-2023 10:15 til  
09-03-2023 12:00

location 28b.0-01 - store teorirum (30)

Teacher Henriette Selck ( selck@ruc.dk )  
Amalie Thit Bruus Jensen ( athitj@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 13-03-2023 10:15 til  
13-03-2023 12:00

location 28b.0-05 - lille teorirum (20)

Teacher Henriette Selck ( selck@ruc.dk )  
Amalie Thit Bruus Jensen ( athitj@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 16-03-2023 10:15 til  
16-03-2023 12:00

location 28b.0-01 - store teorirum (30)

Teacher Amalie Thit Bruus Jensen ( athitj@ruc.dk )  
Henriette Selck ( selck@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 20-03-2023 10:15 til  
20-03-2023 12:00

location 28b.0-05 - lille teorirum (20)

Teacher Amalie Thit Bruus Jensen ( athitj@ruc.dk )  
Henriette Selck ( selck@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 23-03-2023 10:15 til  
23-03-2023 12:00

location 28b.0-01 - store teorirum (30)

Teacher Henriette Selck ( selck@ruc.dk )  
Amalie Thit Bruus Jensen ( athitj@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 27-03-2023 10:15 til  
27-03-2023 12:00

location 28b.0-05 - lille teorirum (20)

Teacher Henriette Selck ( selck@ruc.dk )  
Amalie Thit Bruus Jensen ( athitj@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 30-03-2023 10:15 til  
30-03-2023 12:00

location 28b.0-01 - store teorirum (30)

Teacher Henriette Selck ( selck@ruc.dk )  
Amalie Thit Bruus Jensen ( athitj@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 11-04-2023 14:15 til  
11-04-2023 16:00

location 28b.0-01 - store teorirum (30)

Teacher Amalie Thit Bruus Jensen ( athitj@ruc.dk )  
Henriette Selck ( selck@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 13-04-2023 10:15 til  
13-04-2023 12:00

location 28b.0-01 - store teorirum (30)

Teacher Henriette Selck ( selck@ruc.dk )  
Amalie Thit Bruus Jensen ( athitj@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 17-04-2023 10:15 til  
17-04-2023 12:00

location 28b.0-05 - lille teorirum (20)

Teacher Amalie Thit Bruus Jensen ( athitj@ruc.dk )  
Henriette Selck ( selck@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 20-04-2023 10:15 til  
20-04-2023 12:00

location 28b.0-01 - store teorirum (30)

Teacher Henriette Selck ( selck@ruc.dk )  
Amalie Thit Bruus Jensen ( athitj@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 24-04-2023 10:15 til  
24-04-2023 12:00

location 28b.0-05 - lille teorirum (20)

Teacher Henriette Selck ( selck@ruc.dk )  
Amalie Thit Bruus Jensen ( athitj@ruc.dk )



## Ecotoxicology - Theory and Practice (ES)

time 27-04-2023 10:15 til  
27-04-2023 12:00

location 28b.0-01 - store teorirum (30)

Teacher Amalie Thit Bruus Jensen ( athitj@ruc.dk )  
Henriette Selck ( selck@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 01-05-2023 08:15 til  
01-05-2023 16:00

location 28b.0-05 - lille teorirum (20)

Teacher Henriette Selck ( selck@ruc.dk )  
Amalie Thit Bruus Jensen ( athitj@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 02-05-2023 08:15 til  
02-05-2023 16:00

location 28b.0-05 - lille teorirum (20)

Teacher Amalie Thit Bruus Jensen ( athitj@ruc.dk )  
Henriette Selck ( selck@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 03-05-2023 08:15 til  
03-05-2023 16:00

location 28b.0-05 - lille teorirum (20)

Teacher Henriette Selck ( selck@ruc.dk )  
Amalie Thit Bruus Jensen ( athitj@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 04-05-2023 08:15 til  
04-05-2023 16:00

location 28b.0-05 - lille teorirum (20)

Teacher Henriette Selck ( selck@ruc.dk )  
Amalie Thit Bruus Jensen ( athitj@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 08-05-2023 08:15 til  
08-05-2023 16:00

location 28b.0-05 - lille teorirum (20)

Teacher Amalie Thit Bruus Jensen ( athitj@ruc.dk )  
Henriette Selck ( selck@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 09-05-2023 08:15 til  
09-05-2023 16:00

location 28b.0-05 - lille teorirum (20)

Teacher Henriette Selck ( selck@ruc.dk )  
Amalie Thit Bruus Jensen ( athitj@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 10-05-2023 08:15 til  
10-05-2023 16:00

location 28b.0-05 - lille teorirum (20)

Teacher Henriette Selck ( selck@ruc.dk )  
Amalie Thit Bruus Jensen ( athitj@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 11-05-2023 08:15 til  
11-05-2023 16:00

location 28b.0-05 - lille teorirum (20)

Teacher Henriette Selck ( selck@ruc.dk )  
Amalie Thit Bruus Jensen ( athitj@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 12-05-2023 08:15 til  
12-05-2023 16:00

location 28b.0-05 - lille teorirum (20)

Teacher Henriette Selck ( selck@ruc.dk )  
Amalie Thit Bruus Jensen ( athitj@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 15-05-2023 08:15 til  
15-05-2023 16:00

location 28b.0-05 - lille teorirum (20)

Teacher Henriette Selck ( selck@ruc.dk )  
Amalie Thit Bruus Jensen ( athitj@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 16-05-2023 08:15 til  
16-05-2023 16:00

location 28b.0-05 - lille teorirum (20)

Teacher Amalie Thit Bruus Jensen ( athitj@ruc.dk )  
Henriette Selck ( selck@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 17-05-2023 08:15 til  
17-05-2023 16:00

location 28b.0-05 - lille teorirum (20)

Teacher Amalie Thit Bruus Jensen ( athitj@ruc.dk )  
Henriette Selck ( selck@ruc.dk )

## Ecotoxicology - Theory and Practice (ES)

time 19-05-2023 08:15 til  
19-05-2023 16:00

location 28b.0-05 - lille teorirum (20)

Teacher Amalie Thit Bruus Jensen ( athitj@ruc.dk )  
Henriette Selck ( selck@ruc.dk )

## Ecotoxicology - Theory and Practice - Exam (ES)

time 09-06-2023 10:00 til  
09-06-2023 14:00

location 25.1-035 - teorirum 25.1 (98)

## Ecotoxicology - Theory and Practice - Reexam (ES)

time	10-08-2023 10:00 til 10-08-2023 14:00
forberedelsesnorm	ikke valgt
forberedelsesnorm D-VIP	ikke valgt
location	07.1-061 - undervisningslokale (30)