

# Spatial Analysis of the Environment

Title	Spatial Analysis of the Environment
Semester	F2023
Master programme in	Miljørisiko / Bæredygtig Omstilling (TekSam) / Environmental Science
Type of activity	Course
Teaching language	English
Study regulation	Read about the Master Programme and find the Study Regulations at <a href="https://ruc.dk">ruc.dk</a>  Læs mere om uddannelsen og find din studieordning på <a href="https://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	The Master Programme/Institute reserves the right to cancel the course if fewer than 8 studentes are registered for the course.
ECTS	5
Responsible for the activity	Gry Lyngsie ( <a href="mailto:lyngsie@ruc.dk">lyngsie@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)	U60100

## ACADEMIC CONTENT

Overall objective	<p>The this course provides a theoretical basis and practical experience in working with geographical-oriented IT tools (e.g., GIS) used to identify, analyse and map potential hazards and make a risk assessment of ecosystems and people in relation to spatial dynamic variations in the physical environment (air, water, soil) through a problem-oriented approach. The course contains lectures and computer sessions with practical use of GIS and other relevant programs.</p>
Detailed description of content	<p>The this course provides a theoretical basis and practical experience in working with geographical-oriented IT tools (e.g., GIS) used to identify, analysis and map potential hazards and make a risk assessment of ecosystems and people in relation to spatial dynamic variations in the physical environment (air, water, soil) through a problem-oriented approach.</p> <p>The course contains lectures and computer sessions with practical use of GIS and other relevant programs.</p>
Course material and Reading list	<p>A combination of a textbook and scientific literature. More details will be announced on Moodle.</p>
Overall plan and expected work effort	<p>The course is a 5 ETCS credit course, corresponding to an expected student work load of 135 hours.</p> <p>About one third of these hours (50 h) are contact hours while the remaining 85 hours are meant for preparation, project work and report writing.</p> <p>Contact hours are approximately divide in:</p> <ul style="list-style-type: none"> <li>• Lectures 8 h</li> <li>• Exercises 36 h</li> <li>• Project/report with supervision 6 h</li> </ul> <p>We expect that students spend at least 3-4 hours on preparation for each 2 hour lecture.</p>
Format	
Evaluation and feedback	<p>The course includes formative evaluation based on dialogue between the students and the teacher(s).</p> <p>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.</p> <p>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 form the course to the study board during or after the course.</p>
Programme	<p>The final report in this course has the form of consulting assignment ordered by a municipality. Your task in the report, and though out the course, is to appoint an area, which have a potential of reducing nitrate, if it is restored into its natural drain conditions as wet meadows.</p>

Doing the supervised excises, you will work on the map material need for the report. Prior to most class excises, there will be flipped classroom lectures available via moodle. During the lectures, you will furthermore be introduced to the theoretical background you need to writ the report concerning wetlands; where and why they form and their role in nitrite leaching.

Further, you will get an introduction to the Collector app and how to use it in a soil sampling context and an introduction to the nitrate leaching model Daisy.

## ASSESSMENT

Overall learning outcomes

After completing the course, students will be able to:

- demonstrate theoretic and practical knowledge of the theories and methods used for spatial analyses of environmental issues
- evaluate best practice for analyzing environmental geodata using GIS and geostatistical methods
- evaluate Dynamics in physical landscape parameters
- select relevant GIS and geostatistical methods
- formulate simple dynamic spatial analyses of field and geodata
- independently investigate, analyse and solve research questions where it is relevant to use remote sensing or environmental geodata
- interpret and work with environmental GIS data and maps that can be used to analyse and evaluate regulations, advice and research
- evaluate dynamics in physical landscape parameters
- assess, conjunct and communicate the results of spatial geostatistical analyses.

Form of examination

The course is passed through active, regular attendance and satisfactory participation.

Active participation is defined as:

The student must participate in course related activities (e.g. workshops, seminars, field excursions, process study groups, working conferences, supervision groups, feedback sessions).

Regular attendance is defined as:

- The student must be present for minimum 80 percent of the lessons.

Satisfactory participation is defined as:

- e.g. oral presentations (individually or in a group), peer reviews, mini projects, test, planning of a course session.

Assessment: Pass/Fail.

Re-exam:

Students that have only met the requirement of regular attendance between 50% and 80% must hand in an additional report.

Form of Re-examination

Samme som ordinær eksamen / same form as ordinary exam

Type of examination in special cases

Examination  
and  
assessment  
criteria

The course is passed through active, regular attendance and satisfactory participation.

Regular attendance is defined as: The student must be present for minimum 80 percent of the lessons.

Satisfactory participation is defined as: Handing in a group report and an individual log-book.

Student,s report will be assessed by their ability to:

- demonstrate theoretic and practical knowledge of the theories and methods used for spatial analyses of environmental issues
- evaluate best practice for analyzing environmental geodata using GIS and geostatistical methods
- evaluate Dynamics in physical landscape parameters select relevant GIS and geostatistical methods
- formulate simple dynamic spatial analyses of field and geodata
- independently investigate, analyse and solve research questions where it is relevant to use remote sensing or environmental geodata
- interpret and work with environmental GIS data and maps that can be used to analyse and evaluate regulations, advice and research
- evaluate dynamics in physical landscape parameters
- assess, conjunct and communicate the results of spatial geostatistical analyses.

Assessment: Pass/Fail.

Exam code(s)      Exam code(s) : U60100

Course days:

Hold: 1

## Spatial Analysis of the Environment - GIS crash course

time	03-02-2023 08:15 til 03-02-2023 12:00
forberedelsesnorm	ikke valgt
forberedelsesnorm D- VIP	ikke valgt
Location (when shared activity)	02.1-203 - gis 1 (27)
Teacher	Esbern Holmes ( holmes@ruc.dk )

Content

For students, who did not attend this course in the fall 2022:

Constituent course in GIS and knowledge base for selected environmental regulations

## Spatial Analysis of the Environment

time 07-02-2023 08:15 til  
07-02-2023 12:00

location 02.1-203 - gis 1 (27)

Teacher Gry Lyngsie ( lyngsie@ruc.dk )

## Spatial Analysis of the Environment

time 10-02-2023 08:15 til  
10-02-2023 10:00

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

Teacher Gry Lyngsie ( lyngsie@ruc.dk )

## Spatial Analysis of the Environment

time 15-02-2023 08:15 til  
15-02-2023 12:00

location 02.1-203 - gis 1 (27)

Teacher Gry Lyngsie ( lyngsie@ruc.dk )

## Spatial Analysis of the Environment

time 17-02-2023 08:15 til  
17-02-2023 10:00

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

Teacher Gry Lyngsie ( lyngsie@ruc.dk )

## Spatial Analysis of the Environment

time 24-02-2023 08:15 til  
24-02-2023 10:00

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

Teacher Gry Lyngsie ( lyngsie@ruc.dk )

## Spatial Analysis of the Environment

time 14-03-2023 08:15 til  
14-03-2023 12:00

location 02.1-203 - gis 1 (27)

Teacher Gry Lyngsie ( lyngsie@ruc.dk )

## Spatial Analysis of the Environment

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

forberedelsesnorm ikke valgt

forberedelsesnorm D-VIP ikke valgt

location 02.1-203 - gis 1 (27)

Teacher Esbern Holmes ( holmes@ruc.dk )

## Spatial Analysis of the Environment

time 17-03-2023 08:15 til  
17-03-2023 10:00

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

Teacher Gry Lyngsie ( lyngsie@ruc.dk )

## Spatial Analysis of the Environment

time 21-03-2023 08:15 til  
21-03-2023 12:00

location 02.1-203 - gis 1 (27)

Teacher Gry Lyngsie ( lyngsie@ruc.dk )

## Spatial Analysis of the Environment

time 24-03-2023 08:15 til  
24-03-2023 10:00

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

Teacher Gry Lyngsie ( lyngsie@ruc.dk )

## Spatial Analysis of the Environment

time 28-03-2023 08:15 til  
28-03-2023 12:00

location 02.1-203 - gis 1 (27)

Teacher Gry Lyngsie ( lyngsie@ruc.dk )

## Spatial Analysis of the Environment

time 31-03-2023 08:15 til  
31-03-2023 10:00

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

Teacher Gry Lyngsie ( lyngsie@ruc.dk )

## Spatial Analysis of the Environment

time 11-04-2023 08:15 til  
11-04-2023 12:00

location 02.1-203 - gis 1 (27)

Teacher Gry Lyngsie ( lyngsie@ruc.dk )

## Spatial Analysis of the Environment

time 14-04-2023 08:15 til  
14-04-2023 10:00

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

Teacher Gry Lyngsie ( lyngsie@ruc.dk )

## Spatial Analysis of the Environment

time 18-04-2023 08:15 til  
18-04-2023 12:00

location 02.1-203 - gis 1 (27)

Teacher Gry Lyngsie ( lyngsie@ruc.dk )

## Spatial Analysis of the Environment

time 21-04-2023 08:15 til  
21-04-2023 10:00

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

Teacher Gry Lyngsie ( lyngsie@ruc.dk )

## Spatial Analysis of the Environment

time 25-04-2023 08:15 til  
25-04-2023 12:00

location 02.1-203 - gis 1 (27)

Teacher Gry Lyngsie ( lyngsie@ruc.dk )

## Spatial Analysis of the Environment

time 28-04-2023 08:15 til  
28-04-2023 10:00

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

Teacher Gry Lyngsie ( lyngsie@ruc.dk )

## Spatial Analysis of the Environment - Hand in of an additional report (reexam) (ES)

time 12-05-2023 10:00 til  
12-05-2023 10:00

forberedelsesnorm ikke valgt

forberedelsesnorm D-VIP ikke valgt