

Constituent course in GIS and knowledge base for selected environmental regulations

Title	Constituent course in GIS and knowledge base for selected environmental regulations
Semester	E2022
Master programme in	Bæredygtig Omstilling (TekSam) / Environmental Science
Type of activity	Course
Teaching language	English
Study regulation	Læs mere om uddannelsen og find din studieordning på ruc.dk Read about the Master Programme and find the Study Regulations at ruc.dk

REGISTRATION AND STUDY ADMINISTRATIVE

Du skal tilmelde dig på [stads](#) i tilmeldingsperioden, som du kan se på [intra](#)

Når du tilmelder dig studieaktiviteter, skal du være opmærksom på, om undervisning og eksamen i de forskellige studieaktiviteter er på samme tidspunkt. RUC planlægger studieaktiviteter sådan at der ikke er overlap, hvis du følger dit anbefalede studieforløb. I forhold til valgfrie elementer og studieplaner, som afviger fra det anbefalede studieforløb, kan der dog forekomme overlap, alt efter hvilke kurser du vælger.

Registration Sign up for study activities at [STADS Online Student Service](#) within the announced registration period, as you can see on the [Study administration homepage](#).

When signing up for study activities, please be aware of potential conflicts between study activities or exam dates. 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.

Number of participants

ECTS 5

Responsible for the activity

Esbern Holmes (holmes@ruc.dk)
Henrik Haugaard-Nielsen (hnie@ruc.dk)

Head of study Bente Kjærgård (bkj@ruc.dk)

Henrik Haugaard-Nielsen

Teachers

Gry Lyngsie

Esbern Holmes

Study administration

IMT Studyadministration (imt-studyadministration@ruc.dk)

Exam code(s) U60013

ACADEMIC CONTENT

Overall objective

The course focuses on current issues associated to natural resources in the open country and environmental assessments prior to decisions that may significantly affect the environment. Emphasis is on the knowledge base, the use of Geographic Information System (GIS) and, the key factors for obtaining good quality in the knowledge base for decision makers and for building policy and regulation on a quantitative base. The course has three dimensions:

1. Planning tools and the knowledge base for regulation
2. Climate-oriented regulation
3. The interplay between knowledge base and politics

Detailed description of content

The course focuses on current issues associated to natural resources in the open country and environmental assessments prior to decisions that may significantly affect the environment. Emphasis is on the knowledge base and the use of Geographic Information System (GIS) for policymaking based on, or informed by, rigorously established objective evidence. Thus, building policy and regulation on a quantitative base. The course has three dimensions:

1. Planning tools and the knowledge base for regulation
2. Climate-oriented regulation
3. The interplay between knowledge base and politics

Course material and Reading list The course literature is linked to each individual course and planned according to the stated expected work effort. Reading instructions and access to the written material will be made available on moodle.

The course is 5 ECTS, corresponding to 135 hours of work for each student. An approximate distribution is:

- preparation of lectures: 3 hours per lecture
- participation in lectures: 2 hours per lecture.
- preparation for lab activities: 2 hours
- participation in lab activities: 2 hours
- Exercises and feedback to fellow students 24 hours.
- Final exam paper: 21 hours

Overall plan and expected work effort The course depends on a high degree of participant involvement, which requires extensive preparation in order to meet the desired learning goals. From the above it appears approx. 64 hours of independent work, 50 hours of written exercises, presentations, and feedback to fellow students. 21 hours for exams.

Learning activities:

- In the lectures, we will focus on the knowledge base of environmental assessments prior to policymaker decisions and interventions to mitigate the course of specific environmental problems.
- Each lecture is supplemented with a lab activity where the students work directly with Geographical Information Systems (GIS) in order to understand how existing geodata can be used to represent relevant spatial knowledge potentially qualifying the decisions taken.

Format

Evaluation and feedback During the course different forms of evaluation and feedback is used in combination with home assignments. The students are expected to: i) contribute to a living learning environment during lectures and labs; ii) participate in feedback on each other's assignments to support cooperative

learning, and iii) present in plenum primary results from assignments and plenary discussions

A final oral evaluation of the entire course is held, and all students are expected to complete an electronic individual evaluation.

Each lecture (Level 1) is supported by a GIS lab (level 2)

1. Introduction to how geodata represents spatial knowledge

- 1.1. Introduction to geodata and how it is handled in GIS

2. Knowledge base and data base

- 2.1. Description of an area basis on the existing environmental data

3. Dissemination of the digital representation of the physical space

- 3.1. Use of basic layout and symbols to design a synoptic presentation

4. Socio-economic assessment of environmental projects

- Programme
- 4.1. Performing key calculations around spatial data represented.

5. Pollution and effects on the socio-ecological system

- 5.1. Evaluate existing data availability for effects descriptions in relation to the wishes and needs of different actors

6. Land use and biodiversity relationships

- 6.1. Picturing changed land use and re-establishment of historic and new habitats

7. Land use, land use change and forestry

- 7.1. Obtain and analyse data from satellite-based observation platforms

8. Climate footprint and land use in connection with mega-trends in human food consumption

- 8.1. Changed crop selection and environmental effects
9. Public authorities' work with environmental assessments, why and how
- 9.1. Different methods of collecting spatial data from citizens
10. Workshop with selected topics, primary conclusions, visualization (part of exam assessment)
11. Final debate on knowledge base and political processes for decision making

ASSESSMENT

Knowledge, skills and competences

Overall learning outcomes

- can establish an overview of and assess the relevance of central spatial data collections within selected environmental areas: climate, energy, industry and waste, transport, agriculture and food, nature, and biodiversity
- can identify, select, and present data for supporting decisions on selected environmental challenges
- can select, apply, and reflect on the scope of GIS methods, models and data as well as assess the knowledge base for regulation
- can collect and navigate spatial data collections and extract and present new knowledge
- can assess interactions between spatial knowledge, political institutions and opportunities to steer towards policy objectives
- can select, organize and analyze spatial data as decision support for regulatory efforts

Oral group exam based on a product written by a group

Permitted group size: 2-4 students.

Form of examination

The character limit of the written product is:
 For 2 students: 9,600-19,200 characters, including spaces.
 For 3 students: 16,800-21,600 characters, including spaces.
 For 4 students: 24,000-28,800 characters, including spaces.

The character limits include the cover, table of contents, bibliography, figures and other illustrations, but exclude any appendices.

Time allowed for exam including time used for assessment is for:

2 students: 30 minutes.

3 students: 40 minutes.

4 students: 50 minutes.

The assessment is individual and based on the student's individual performance.

The assessment is an overall assessment of the written product(s) and the subsequent oral examination..

Permitted support and preparation materials at the oral exam: All.

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

Oral group exam based on written products prepared by the participating in the lab activities. Based on specific courses and lab activities four peergrade assignments are performed, of which the students can choose to hand in three for the exam. This could be an impact on the digital knowledge representation of a subject area. For instance: i) Carbon sequestration and groundwater; ii) Pollution and effects on the socio-ecological system; iii) Nature lacks space; iv) Changed land use practices to meet human diet shifts In addition to the peergrade assignments the students fill in a logbook writing approximately half a page with main learning points from the individual course and lab exercises. A compilation of the logbook notes are also submitted and used for the exam in principal including the entire course syllabus.

The assessment criteria: • The ability to select and apply as well as reflect on the range of methods, models and data bases as a knowledge base for regulation within selected areas. • The ability to identify roles and opportunities for action for relevant knowledge institutions, involved parties and societal actors for specific selected regulatory areas • The ability to collect and navigate in spatial data collections and extract and

present new knowledge from here • The ability to recommend relevant knowledge base for societal institutions regarding regulation of selected problem areas • The ability to assess interactions between knowledge, political institutions and opportunities to steer towards political objectives

In addition, the student have to meet all formal requirements regarding active, regular and satisfactory participation, which involves participation in 70% of the course sessions as well as participation in the activities associated with the course. If the student does not meet the attendance requirement, the re-examination for this constitutes a written assignment based on given questions with a scope of a minimum of 21,600 number of characters and a maximum of 43,200 number of characters incl. spaces. The scope requirements include any front page, table of contents, bibliography, figures, and other illustrations, but excluding any appendices.

Exam code(s) Exam code(s) : U60013

Course days:

Hold: 1

Constituent course in GIS and knowledge base for selected environmental regulations (BOMS)

time 14-09-2022 12:15 til
14-09-2022 16:00

location 11.2-047 - gl. natfagsal (65) / 02.1-203 - gis 1 (27)

Teacher Henrik Hauggaard-Nielsen (hnie@ruc.dk)

Constituent course in GIS and knowledge base for selected environmental regulations (BOMS)

time 21-09-2022 12:15 til
21-09-2022 16:00

location 02.1-095 - kort og sten-salen (60) / 02.1-203 - gis 1 (27)

Teacher Henrik Hauggaard-Nielsen (hnie@ruc.dk)

Constituent course in GIS and knowledge base for selected environmental regulations (BOMS)

time 12-10-2022 12:15 til
12-10-2022 16:00
forberedelsesnorm ikke valgt
forberedelsesnorm D-VIP ikke valgt
location 02.1-031 - geofagsal 02 (60)
Teacher Henrik Hauggaard-Nielsen (hnie@ruc.dk)

Constituent course in GIS and knowledge base for selected environmental regulations (BOMS)

time 26-10-2022 12:15 til
26-10-2022 16:00
location 02.1-095 - kort og sten-salen (60) / 02.1-203 - gis 1 (27)
Teacher Henrik Hauggaard-Nielsen (hnie@ruc.dk)

Constituent course in GIS and knowledge base for selected environmental regulations (BOMS)

time 02-11-2022 12:15 til
02-11-2022 16:00
location 02.1-095 - kort og sten-salen (60) / 02.1-203 - gis 1 (27)
Teacher Henrik Hauggaard-Nielsen (hnie@ruc.dk)

Constituent course in GIS and knowledge base for selected environmental regulations (BOMS)

time 09-11-2022 12:15 til
09-11-2022 16:00
location 02.1-095 - kort og sten-salen (60) / 02.1-203 - gis 1 (27)
Teacher Henrik Hauggaard-Nielsen (hnie@ruc.dk)

Constituent course in GIS and knowledge base for selected environmental regulations (BOMS)

time 16-11-2022 12:15 til
16-11-2022 16:00
location 11.2-047 - gl. natfagsal (65) / 02.1-203 - gis 1 (27)
Teacher Henrik Hauggaard-Nielsen (hnie@ruc.dk)

Constituent course in GIS and knowledge base for selected environmental regulations (BOMS)

time 30-11-2022 12:15 til
30-11-2022 16:00

location 02.1-095 - kort og sten-salen (60) / 02.1-203 - gis 1 (27)

Teacher Henrik Hauggaard-Nielsen (hnie@ruc.dk)

Constituent course in GIS and knowledge base for selected environmental regulations (BOMS)

time 07-12-2022 12:15 til
07-12-2022 16:00

location 02.1-203 - gis 1 (27) / 02.1-095 - kort og sten-salen (60)

Teacher Henrik Hauggaard-Nielsen (hnie@ruc.dk)

Constituent course in GIS and knowledge base for selected environmental regulations (BOMS)

time 14-12-2022 12:15 til
14-12-2022 16:00

location 02.1-095 - kort og sten-salen (60) / 02.1-203 - gis 1 (27)

Teacher Henrik Hauggaard-Nielsen (hnie@ruc.dk)

Constituent course in GIS and knowledge base for selected environmental regulations - Hand-in (BOMS)

time 04-01-2023 10:00 til
04-01-2023 10:00

forberedelsesnorm ikke valgt

forberedelsesnorm D-VIP ikke valgt

Constituent course in GIS and knowledge base for selected environmental regulations - Oral examination (BOMS)

time 12-01-2023 08:15 til
13-01-2023 18:00

forberedelsesnorm ikke valgt

forberedelsesnorm D-VIP ikke valgt

location 08.2-033 - teorilokale (24)

**Constituent course in GIS and knowledge base for selected
environmental regulations - Reexam - Hand-in (BOMS)**

time 13-02-2023 10:00 til
13-02-2023 10:00
forberedelsesnorm ikke valgt
forberedelsesnorm D-VIP ikke valgt

**Constituent course in GIS and knowledge base for selected
environmental regulations - Oral reexamination (BOMS)**

time 20-02-2023 08:15 til
20-02-2023 18:00
forberedelsesnorm ikke valgt
forberedelsesnorm D-VIP ikke valgt
location 08.1-047 - mødelokale (16)