AALBORG UNIVERSITET

STUDIEORDNING FOR KANDIDATUDDANNELSEN (CAND.TECH) I LANDINSPEKTØRVIDENSKAB - 2015 - KØBENHAVN

CAND.TECH.
KØBENHAVN

MODULER SOM INDGÅR I STUDIEORDNINGEN

INDHOLDSFORTEGNELSE

GI TECHNOLOGY AND INFORMATION SYSTEMS

2018/2019

PREREQUISITE/RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

Basic knowledge about geographic information and information technology. Following the modules 'Geospatial Information Technology' and 'Land Governance and Geographic Information in a societal context' in parallel.

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

To give students the opportunity to work with self-defined problems related to Spatial databases and Internet based GIS

LEARNING OBJECTIVES

KNOWLEDGE

- The fundamental principles of Problem Based Learning (PBL) as implemented in the Aalborg PBL model at the Faculty of Engineering and Science (*)

SKILLS

- Analysing problems related to the development of geospatial applications
- Assessing different distributed GIS architectures
- Evaluate the role of standards in spatial information systems
- Structuring project management activities based on a well-formulated problem formulation (*)

COMPETENCES

- Mastering the full systems development path for self-defined problems
- Developing and setting up simple distributed GIS solutions
- Designing a Spatial Data Infrastructure for a minor organisation
- Reflecting on, planning and managing a study project in a PBL learning environment (*)

TYPE OF INSTRUCTION

Self-study work with supervision.

EXAM

EXAMS

Name of exam	GI Technology and Information Systems
Type of exam	Oral exam based on a project
ECTS	20
Permitted aids	
Assessment	7-point grading scale
Type of grading	External examination
Criteria of assessment	Stated in the framework provisions.

FACTS ABOUT THE MODULE

Danish title	GI Teknologi og Informationssystemer
Module code	PGLLANK15105
Module type	Project
Duration	1 semester
Semester	Autumn
ECTS	20
Language of instruction	English
Empty-place Scheme	Yes
Location of the lecture	Campus Copenhagen
Responsible for the module	Anne Lise Schrøder

ORGANISATION

Study Board	Studyboard for Planning, Geography and Surveying
Department	Department of Planning
Faculty	Technical Faculty of IT and Design

GEOSPATIAL INFORMATION TECHNOLOGY

2018/2019

PREREQUISITE/RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

Entrance requirements for the study programme and following the course 'Land Governance and Geographic Information in a societal context' in parallel

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

Students who complete the module will acquire the following knowledge, skills and competencies:

LEARNING OBJECTIVES

KNOWLEDGE

- Systems design by AGILE methods
- System development for geospatial applications
- Spatial databases and query languages
- Principles of Distributed GIS
- Standards for web-based GI applications

SKILLS

- Understanding the path from user requirements over design to implementation and test.
- Applying up-to-date system development methods and programming tools
- Evaluating the various approaches to systems design and development.

COMPETENCES

- Must have the ability to design and build simple spatial enabled applications using modern object orientated development tools

TYPE OF INSTRUCTION

Combined lectures and exercises.

EXAM

EXAMS

Name of exam	Geospatial Information Technology
Type of exam	Written exam
ECTS	5
Permitted aids	
Assessment	Passed/Not Passed
Type of grading	Internal examination
Criteria of assessment	Stated in the framework provisions.

FACTS ABOUT THE MODULE

Danish title	Geospatial informationsteknologi
Module code	PGLLANK15104
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	English
Empty-place Scheme	Yes
Location of the lecture	Campus Copenhagen
Responsible for the module	Anne Lise Schrøder

ORGANISATION

Study Board	Studyboard for Planning, Geography and Surveying
Department	Department of Planning
Faculty	Technical Faculty of IT and Design

LAND GOVERNANCE AND GEOGRAPHIC INFORMATION IN A SOCIETAL CONTEXT

2018/2019

PREREQUISITE/RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

Students must have a bachelor degree in surveying, land management, urban planning, environmental planning, geography or study programs with similar contents.

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

Students who complete the module will acquire the following knowledge, skills and competencies:

LEARNING OBJECTIVES

KNOWLEDGE

- about the role of geographic information and spatial data infrastructures (SDI) as a basis for societal infrastructures in large, including land administration systems (LAS).
- of principles of data collection, structuring and management geographic information – including property related data in land administration systems
- about standardization activities – including INSPIRE – and the national implementation here of
- about spatial data infrastructure in the Nordic countries - exemplified by the development of land administration systems
- of technologies and organizational structures for building and managing geographic information systems (GIS)
- of the role of SDI in e-Government

SKILLS

- be able to identify core issues – of both a legal, ethical, technical, environmental, organizational, economic and social nature – in relation to the development and implementation of SDI in support of societal infrastructures.
- be able to understand geographic information technology as an element in land administration systems and e-government
- be able to understand the importance of standardization and data quality, including the understanding of metadata
- understand the collection, management, distribution and use of geographic information - for example in relation to Public Participation GIS

COMPETENCES

- in advising on the understanding and use of geographical information
- in advising on the development and implementation of SDI, GIS and LAS

TYPE OF INSTRUCTION

Lectures, workshops, seminars, assignments, presentations.

EXAM

EXAMS

Name of exam	Land Governance and Geographic Information in a societal context
Type of exam	Active participation and/or written assignment

ECTS	5
Permitted aids	
Assessment	Passed/Not Passed
Type of grading	Internal examination
Criteria of assessment	Stated in the framework provisions

FACTS ABOUT THE MODULE

Danish title	Styring af arealanvendelsen og geografisk information i en samfundsmæssig kontekst
Module code	PGLLANK15101
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	English
Empty-place Scheme	Yes
Location of the lecture	Campus Aalborg, Campus Copenhagen
Responsible for the module	Carsten Jahn Hansen

ORGANISATION

Study Board	Studyboard for Planning, Geography and Surveying
Department	Department of Planning
Faculty	Technical Faculty of IT and Design

GI – INTEGRATION, APPLICATIONS AND SOCIETY

2018/2019

PREREQUISITE/RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

1. Semester completed or similar qualifications.

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

To give students the opportunity to work with self-defined problems related to the role of GI in decision-making applying geocomputation techniques, geovisualisation, image processing and decision support technology.

LEARNING OBJECTIVES

SKILLS

- The use of different spatial analysis and geocomputation technologies and understanding their strengths and weaknesses in decision-making processes
- Being aware of the potential role of geovisualisation in all steps of decision-making
- Evaluating various types of spatial decision support systems

COMPETENCES

- Designing and setting up advanced systems for knowledge based e-government in smaller organisations

TYPE OF INSTRUCTION

Self-study works with supervision.

EXAM

EXAMS

Name of exam	GI – Integration, Applications and Society
Type of exam	Oral exam based on a project
ECTS	20
Permitted aids	
Assessment	7-point grading scale
Type of grading	External examination
Criteria of assessment	Stated in the framework provisions.

FACTS ABOUT THE MODULE

Danish title	GI – Integration, anvendelser og samfundet
Module code	PGLLANK15206
Module type	Project
Duration	1 semester

Semester	Spring
ECTS	20
Language of instruction	English
Empty-place Scheme	Yes
Location of the lecture	Campus Copenhagen
Responsible for the module	Anne Lise Schrøder

ORGANISATION

Study Board	Studyboard for Planning, Geography and Surveying
Department	Department of Planning
Faculty	Technical Faculty of IT and Design

GEOCOMPUTATION AND SPATIAL ANALYTICS

2018/2019

PREREQUISITE/RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

1. semester or similar qualifications

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

Students who complete the module will acquire the following knowledge, skills and competencies:

LEARNING OBJECTIVES

KNOWLEDGE

- A wide range of advanced analysis and modelling methods like spatial statistics, cell based modelling, network analysis, cellular automata, multivariate analysis and classification
- Multi-criteria evaluation and decision support systems.

SKILLS

- Being able to understand the strengths and weaknesses of the different geoprocessing methods and tools.
- Identifying and applying advanced geocomputation and decision analysis to solve practical problems

COMPETENCES

- Having the ability to design and develop decision support systems from identifying appropriate data and tools to present the results to the decision makers and the public

TYPE OF INSTRUCTION

Combined lectures and exercises.

EXAM

EXAMS

Name of exam	Geocomputation and Spatial Analytics
Type of exam	Written exam
ECTS	5
Permitted aids	
Assessment	Passed/Not Passed
Type of grading	Internal examination
Criteria of assessment	Stated in the framework provisions.

FACTS ABOUT THE MODULE

Danish title	Geografisk analyse og modellering

Module code	PGLLANK15207
Module type	Course
Duration	1 semester
Semester	Spring
ECTS	5
Language of instruction	English
Empty-place Scheme	Yes
Location of the lecture	Campus Copenhagen
Responsible for the module	Anne Lise Schrøder

ORGANISATION

Study Board	Studyboard for Planning, Geography and Surveying
Department	Department of Planning
Faculty	Technical Faculty of IT and Design

GEOVISUALISATION

2018/2019

PREREQUISITE/RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

1. semester or similar qualifications.

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

Students who complete the module will acquire the following knowledge, skills and competencies:

LEARNING OBJECTIVES

KNOWLEDGE

- The use of geovisualisation as a way of communication
- Interpolation and geostatistical methods as a means of visualising scattered point observations
- The principles for web-based geovisualisation
- Multi-spectral imaging
- Methods and standards for 3D visualisation

SKILLS

- Being able to design simple web-based geovisualisation solutions
- Evaluating different geovisualisation methods from a user’s point of view
- Assessing multi-spectral data sources and visualisation techniques
- Being able to use tools and standards for developing simple 3D visualisations

COMPETENCES

- Carry out advisory tasks concerning appropriate geovisualisation solutions
- Designing and setting up advanced geovisualisation systems

TYPE OF INSTRUCTION

Combined lectures and exercises.

EXAM

EXAMS

Name of exam	Geovisualisation
Type of exam	Written exam
ECTS	5
Permitted aids	
Assessment	Passed/Not Passed
Type of grading	Internal examination
Criteria of assessment	Stated in the framework provisions.

FACTS ABOUT THE MODULE

Danish title	Geovisualisering
Module code	PGLLANK15208
Module type	Course
Duration	1 semester
Semester	Spring
ECTS	5
Language of instruction	English
Empty-place Scheme	Yes
Location of the lecture	Campus Copenhagen
Responsible for the module	Anne Lise Schrøder

ORGANISATION

Study Board	Studyboard for Planning, Geography and Surveying
Department	Department of Planning
Faculty	Technical Faculty of IT and Design

PROFESSIONAL DEVELOPMENT

2018/2019

PREREQUISITE/RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

Students must have completed the 1st semester (and have followed courses and exams at the 2nd semester) or have another education after specific assessment.

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

At the 3rd semester the student can choose between more options:

Option 1: Project semester – with or without an integrated project-oriented stay in a company (Internship)

The student may choose to carry through a traditional project semester which will normally develop the professional competence that the student has acquired within the 1st-2nd semester and/or prepare for the subject about which the student wants to write his/her thesis. The semester comprises preparation of a project report or a scientific article – possibly with the supervisor as the last author of the article.

The student may choose to integrate a project-oriented stay in a company either in Denmark or abroad in the project semester. The project-oriented stay must be of maximum 2-4 months' duration and must be approved in advance by the Study Board of the Programme in Surveying, Planning and Land Management. For each individual project-oriented stay specific learning goals have to be drawn up, clearly reflecting the professional problem of the project.

Option 2: 1st semester of another specialisation

A student who has followed the 1st and 2nd semester under one specialisation may alternatively choose to follow the 1st semester of another specialisation on the Programme of Surveying, Planning and Land Management. In that case the student follows course and project modules at this semester in full and will in this way acquire the knowledge, skills and competences, etc. indicated in the curriculum of the 1st semester of the specialisation in question.

Option 3: International or national credit

After preceding approval by the Study Board the 3rd semester can be carried through at another educational institution in Denmark or abroad. Preceding approval (pre-credit) may be expected if studies at another educational institution will impart knowledge, skills and competences which correspond to the knowledge, skills and competences that could otherwise be obtained by following "Project semester – with or without an integrated project-oriented stay in a company (Internship)", see above.

Option 4: Long final project (thesis)

Students may choose to complete the 3rd and 4th semesters as one long thesis (60 ECTS). Long final project is especially recommended to work with project topics, where an extraordinarily large collection of data is necessary. Final projects must be approved in advance by the Study Board, and the student must fulfil knowledge, skills and competences as indicated for Master's theses.

Students completing the project module acquire the following:

LEARNING OBJECTIVES

KNOWLEDGE

- Must within a selected part of his/her professional field of specialisation have knowledge that bases on the highest international research.
- Must be able to understand and relate critically to the knowledge of the professional field and be able to identify either scientific or practical problems in a given complex context.

SKILLS

- Must be able to master the scientific methods and tools of the professional field and to master general skills connected with the solution of the chosen problem.
- Must be able to assess and choose among the scientific methods, tools and general skills and prepare new analysis and solution models.
- Must be able to discuss professional and scientific problems with both colleagues and non-specialists.

COMPETENCES

- Must be able to control work and development situations that are complex, unpredictable and to imply new solution models.
- Must be able to start and carry through professional and inter-professional cooperation independently and to take a professional responsibility.
- Must be able to independently take the responsibility for own professional development and specialization.

TYPE OF INSTRUCTION

Project work, possibly with an internship integrated into the project course.

EXAM

EXAMS

Name of exam	Professional Development
Type of exam	Oral exam based on a project
ECTS	30
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	Stated in the framework provisions.

FACTS ABOUT THE MODULE

Danish title	Faglig og professionel udvikling
Module code	PGLLANK15301
Module type	Project
Duration	1 semester
Semester	Autumn
ECTS	30
Language of instruction	English
Empty-place Scheme	Yes
Location of the lecture	Campus Aalborg, Campus Copenhagen
Responsible for the module	Carsten Jahn Hansen

ORGANISATION

Study Board	Studyboard for Planning, Geography and Surveying
Department	Department of Planning
Faculty	Technical Faculty of IT and Design

MASTER'S THESIS

2018/2019

PREREQUISITE/RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

Students must have passed the first three semesters of the education.

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

Students completing the module acquire the following:

LEARNING OBJECTIVES

KNOWLEDGE

- Has thorough knowledge of relevant theories and methods in relation to the chosen problem and can reflect on them.
- Is able to describe the used theory or theories so that the special characteristics of this theory are brought to light and in this way document understanding of it or the potentials and limitations of the used theory within the problem field concerned.
- Has knowledge of the scientific-theoretical and methodical roots of the used theories and can reflect on them.
- Has thorough knowledge of the research roots of the chosen problem including knowledge of the most important national and international research in the field.

SKILLS

- Is independently able to plan and complete a project progress at a high professional level.
- Is able to account for possible methods for solving the problem of the project and describe and assess the suitability of the chosen methods and also account for chosen limitations and their significance to the results of the product.
- Is able to account for the relevance of the chosen problem to the education, including a precise account of the core of the problem and the professional context in which it appears.
- Is able to analyse and describe the chosen problem by using relevant theories and empirical investigations.
- Is able to analyse and assess the results of empirical investigations, whether it is a question of the students' own investigations or those of others, including an assessment of the importance of the investigation method to the validity of the results.
- Is able to point at relevant forward-directed strategies, possibilities of change and/or solution proposals.
- Is able to communicate knowledge of the problem to both professionals and non-profes-sionals.

COMPETENCES

- Is able to form a synthesis between the professional problem, theoretical and empirical investigations and to make a critical assessment of the formed synthesis and the other results of the project work.
- Is able to independently participate in interdisciplinary discussions and develop work based on the acquired knowledge of the problem.
- Is able to independently acquire the newest knowledge within the field and on this basis currently improve the professional skills and competences.

TYPE OF INSTRUCTION

Problem-oriented project work in groups.

EXAM

EXAMS

Name of exam	Master's Thesis
Type of exam	Oral exam based on a project
ECTS	30
Permitted aids	
Assessment	7-point grading scale
Type of grading	External examination
Criteria of assessment	Stated in the framework provisions.

FACTS ABOUT THE MODULE

Danish title	Kandidatspeciale
Module code	PGLLANK15401
Module type	Project
Duration	1 semester
Semester	Spring
ECTS	30
Language of instruction	English
Empty-place Scheme	Yes
Location of the lecture	Campus Aalborg, Campus Copenhagen
Responsible for the module	Carsten Jahn Hansen

ORGANISATION

Study Board	Studyboard for Planning, Geography and Surveying
Department	Department of Planning
Faculty	Technical Faculty of IT and Design