



AALBORG UNIVERSITET

MASTER OF SCIENCE (MSC) IN COMPUTER SCIENCE 2017

MASTER OF SCIENCE (MSC)
AALBORG

MODULES INCLUDED IN THE CURRICULUM

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FRA VIRKELIGHED TIL MODELLER

2018/2019

MODULETS INDHOLD, FORLØB OG PÆDAGOGIK

FORMÅL

At den studerende lærer, hvordan man ved hjælp af avancerede datalogiske modeller kan identificere og bidrage til løsning af et problem af anvendelses- eller forskningsmæssig natur og hvordan man ud fra analyse af datalogiske problemer kan bidrage til teoridannelse inden for datalogi

BEGRUNDELSE

En kandidat i datalogi skal kunne anvende avancerede datalogiske teorier og modeldannelser til at identificere og bidrage til løsning af et problem af datalogisk art og i denne forbindelse reflektere over de anvendte teorier og modeldannelser

LÆRINGSMÅL

VIDEN

- redegøre for begreber, resultater og teoridannelser inden for et avanceret område inden for datalogi

FÆRDIGHEDER

- anvende viden fra en teoridannelse inden for datalogi til at vælge og argumentere for en modeldannelse inden for et avanceret datalogisk område
- ud fra en sådan modeldannelse kunne opstille en model af et datalogisk problem og anvende denne model til at forstå problemet

KOMPETENCER

- identificere et problem inden for en problemstilling inden for forskning i eller anvendelse af datalogi
- bidrage til løsningen af problemet ved brug af egen modeldannelse ud fra datalogiske teorier
- analysere og vurdere det fremkomne bidrag til løsning
- analysere og vurdere anvendelser af relevante datalogiske modeller til løsning af dette problem

UNDERVISNINGSFORM

Projektarbejde, der skal omfatte:

- en analyse af en datalogisk problemstilling
- formulering af et problem for denne problemstilling
- opstilling af en avanceret datalogisk model, der bidrager til løsning af problemet

I forbindelse med projektet kan indgå hel eller delvis implementering af en løsning i form af kørende software

OMFANG OG FORVENTET ARBEJDSINDSAT

Det forventes at den studerende bruger 30 timer per ECTS, hvilket for denne aktivitet betyder 450 timer.

EKSAMEN

PRØVER

Prøvens navn	Fra virkelighed til modeller
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Prøveform	Mundtlig pba. projekt
ECTS	15
Bedømmelsesform	7-trins-skala
Censur	Intern prøve
Vurderingskriterier	Som angivet i Fakultets vurderingskriterier http://www.tech.aau.dk/digitalAssets/337/337434_vurderingskriterier.pdf

YDERLIGERE INFORMATIONER

Kontakt: Studienævn for datalogi via cs-sn@cs.aau.dk eller 9940 8854

FAKTA OM MODULET

Engelsk titel	From Reality to Models
Modulkode	DSNDATK101
Modultype	Projekt
Varighed	1 semester
Semester	Efterår
ECTS	15
Tomplads	Ja
Undervisningssted	Campus Aalborg
Modulansvarlig	Lone Leth Thomsen

ORGANISATION

Studienævn	Studienævnet for Datalogi
Institut	Institut for Datalogi
Fakultet	Det Tekniske Fakultet for IT og Design

PROGRAMMING PARADIGMS

2018/2019

PREREQUISITE/RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

Knowledge of Imperative Programming and Object Oriented Programming

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

The student will acquire knowledge of programming paradigms that are alternative and complementary to the imperative paradigm and the object oriented paradigm. Furthermore, students should acquire knowledge on advanced topics in design, implementation and use of programming languages and environments, including

- function-oriented programming
- programming language with dynamic types
- programming techniques in the field of one or more of the four main paradigms: the function-oriented, the imperative, the object-oriented and the logic programming paradigms

SKILLS

- be able to classify and explain the structures in programming languages in relation to the paradigms
- be able to relate language constructions that support different paradigms
- be able to assess the strengths and weaknesses of each paradigm in relation to specific tasks

COMPETENCES

- be able to use paradigmatic constructions in smaller programmes.

TYPE OF INSTRUCTION

The teaching is organized according to the general teaching methods for the education, cf. chapter 3

EXTENT AND EXPECTED WORKLOAD

It is expected that the student uses 30 hours per ECTS, which for this activity means 150 hours

EXAM

EXAMS

Name of exam	Programming Paradigms
Type of exam	Written or oral exam
ECTS	5
Assessment	7-point grading scale
Type of grading	External examination

ADDITIONAL INFORMATION

Contact: The Study board for Computer Science at cs-sn@cs.aau.dk or 9940 8854

FACTS ABOUT THE MODULE

Danish title	Programmeringsparadigmer
Module code	DSNDATFK105
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	Danish and English
Empty-place Scheme	Yes
Location of the lecture	Campus Aalborg
Responsible for the module	Lone Leth Thomsen

ORGANISATION

Study Board	Study Board of Computer Science
Department	Department of Computer Science
Faculty	Technical Faculty of IT and Design

FRA MODELLER TIL VIRKELIGHED

2018/2019

MODULETS INDHOLD, FORLØB OG PÆDAGOGIK

FORMÅL

At den studerende opnår yderligere indsigt i, hvordan man ved hjælp af avancerede datalogiske modeller kan identificere og bidrage til løsning af et problem, der hidrører fra en problemstilling inden for forskning i eller anvendelse af datalogi

BEGRUNDELSE

En kandidat i datalogi skal kunne anvende avancerede datalogiske teorier og modeldannelser til at identificere og bidrage til løsning af et problem af datalogisk art og i denne forbindelse reflektere over de anvendte teorier og modeldannelser

LÆRINGSMÅL

VIDEN

- redegøre for begreber, resultater og teoridannelser inden for et avanceret område inden for datalogi

FÆRDIGHEDER

- anvende viden fra en teoridannelse inden for datalogi til at vælge og argumentere for en modeldannelse inden for et avanceret datalogisk område
- ud fra en sådan modeldannelse kunne opstille en model af et datalogisk problem og anvende denne model til at forstå problemet

KOMPETENCER

- identificere et problem inden for en problemstilling inden for forskning i eller anvendelse af datalogi
- bidrage til løsning af problemet ved brug af egen modeldannelse ud fra datalogiske teorier
- analysere og vurdere det fremkomne bidrag til løsning
- analysere og vurdere anvendelser af relevante datalogiske modeller til løsning af dette problem

UNDERVISNINGSFORM

Projektarbejde, der skal omfatte:

- en analyse af en datalogisk problemstilling
- formulering af et problem for denne problemstilling
- opstilling af en avanceret datalogisk model, der bidrager til løsning af problemet

I forbindelse med projektet kan indgå hel eller delvis implementering af en løsning i form af kørende software

OMFANG OG FORVENTET ARBEJDSINDSAT

Det forventes at den studerende bruger 30 timer per ECTS, hvilket for denne aktivitet betyder 450 timer.

EKSAMEN

PRØVER

Prøvens navn	Fra modeller til virkelighed
Prøveform	Mundtlig pba. projekt

ECTS	15
Bedømmelsesform	7-trins-skala
Censur	Ekstern prøve
Vurderingskriterier	Som angivet i Fakultets vurderingskriterier http://www.tech.aau.dk/digitalAssets/337/337434_vurderingskriterier.pdf

YDERLIGERE INFORMATIONER

Kontakt: Studienævn for datalogi via cs-sn@cs.aau.dk eller 9940 8854

FAKTA OM MODULET

Engelsk titel	From Models to Reality
Modulkode	DSNDATK201
Modultype	Projekt
Varighed	1 semester
Semester	Forår
ECTS	15
Tomplads	Ja
Undervisningssted	Campus Aalborg
Modulansvarlig	Lone Leth Thomsen

ORGANISATION

Studienævn	Studienævnet for Datalogi
Institut	Institut for Datalogi
Fakultet	Det Tekniske Fakultet for IT og Design

SOFTWARE INNOVATION

2018/2019

PREREQUISITE/RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

Thorough understanding of computer science principles that were presented in the previous semester.

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

In this context, software innovation implies the wide definition of innovation related to software development. Emphasis is on innovation, products and processes but also leadership of innovative work and personal and organizational prerequisites for innovation are included in the course.

LEARNING OBJECTIVES

KNOWLEDGE

Software innovation theory:

- central theories about innovation and innovation processes
- personal and organizational conditions for innovation
- theories of software innovation

Innovation methods:

- general methods and techniques to support innovation
- specific methods and techniques for software innovation

Innovation practice:

- experience with methods and techniques in creative and innovative processes
- assessment of strengths and weaknesses of the methods and techniques for creative and innovative processes for software development

SKILLS

- able to explain theories accurately using professional concepts
- able to explain approaches to selection and management of innovative processes in software development
- able to discuss personal and organizational prerequisites for software innovation
- use own experience to explain and discuss tools and techniques supporting software innovation

COMPETENCES

- be able to assess the innovative potential of a software product or software-supported process.

TYPE OF INSTRUCTION

The teaching is organized according to the general teaching methods for the education, cf. chapter 3

EXTENT AND EXPECTED WORKLOAD

It is expected that the student uses 30 hours per ECTS, which for this activity means 150 hours

EXAM

EXAMS

Name of exam	Software Innovation
Type of exam	Written or oral exam
ECTS	5
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	As indicated in the Faculty evaluation criteria

ADDITIONAL INFORMATION

Contact: The Study board for Computer Science at cs-sn@cs.aau.dk or 9940 8854

FACTS ABOUT THE MODULE

Danish title	Softwareinnovation
Module code	DSNDATFK205
Module type	Course
Duration	1 semester
Semester	Spring
ECTS	5
Language of instruction	Danish and English
Empty-place Scheme	Yes
Location of the lecture	Campus Aalborg
Responsible for the module	Lone Leth Thomsen

ORGANISATION

Study Board	Study Board of Computer Science
Department	Department of Computer Science
Faculty	Technical Faculty of IT and Design

FORSPECIALISERING

2018/2019

FORUDSÆTNINGER/ANBEFALEDE FORUDSÆTNINGER FOR AT DELTAGE I MODULET

Anbefalede faglige forudsætninger:

Projekt- og kursusmodulerne på 1. og 2. semester af KA samt at et kursusmodul fra 3. semester KA følges parallelt med projektarbejdet

MODULETS INDHOLD, FORLØB OG PÆDAGOGIK

FORMÅL

At den studerende får indsigt i og kan formidle et aktuelt forskningsproblem inden for datalogi, således at den studerende på 4. semester kan lave sit speciale projekt på baggrund heraf

BEGRUNDELSE

Universitetsuddannelser er forskningsbaserede uddannelser; alle studerende skal på kandidatuddannelsen opnå dybtgående indsigt i forskningens aktuelle problemstilling og metoder

LÆRINGSMÅL

VIDEN

- dokumentere dybtgående kendskab til og overblik over en aktuell problemstilling inden for datalogisk forskning

FÆRDIGHEDER

- ræsonnere om og med de berørte begreber og teknikker
- anvende og skabe teoridannelser inden for fagområdet i forbindelse med formulering af og analyse af et problem inden for datalogisk forskning
- formidle en aktuell datalogisk problemstilling og det tilhørende begrebsapparat inden for forskningsområdets rammer

KOMPETENCER

- anvende begreberne og ræsonnementerne inden for fagområdet til at formulere og analysere et problem inden for en aktuell problemstilling i datalogisk forskning

UNDERVISNINGSFORM

Projektarbejde, der skal omfatte:

- formulering og analyse af et problem inden for en aktuell problemstilling i datalogisk forskning
- begrundede overvejelser om løsning af dette problem

OMFANG OG FORVENTET ARBEJDSINDSAT

Det forventes at den studerende bruger 30 timer per ECTS, hvilket for denne aktivitet betyder 600 timer.

EKSAMEN

PRØVER

Prøvens navn	Forspecialisering
Prøveform	Mundtlig pba. projekt
ECTS	20
Bedømmelsesform	7-trins-skala
Censur	Ekstern prøve
Vurderingskriterier	Som angivet i Fakultets vurderingskriterier http://www.tech.aau.dk/digitalAssets/337/337434_vurderingskriterier.pdf

YDERLIGERE INFORMATIONER

Kontakt: Studienævn for datalogi via cs-sn@cs.aau.dk eller 9940 8854

FAKTA OM MODULET

Engelsk titel	Pre-specialisation
Modulkode	DSNDATFK301
Modultype	Projekt
Varighed	1 semester
Semester	Efterår
ECTS	20
Undervisningssted	Campus Aalborg
Modulansvarlig	Lone Leth Thomsen

ORGANISATION

Studienævn	Studienævnet for Datalogi
Institut	Institut for Datalogi
Fakultet	Det Tekniske Fakultet for IT og Design

ENTREPRENEURSHIP

2018/2019

PREREQUISITE/RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

Academic maturity corresponding to the level of bachelor in a software-related discipline.

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

The student should achieve knowledge about entrepreneurship and business development related to software (information and communication technologies) including typically:

- different scientific approaches to entrepreneurship, including effectuation
- intra-/entrepreneurship
- competition and market conditions
- business models and business plans
- intellectual property rights
- market development and marketing
- growth strategies
- open entrepreneurship

SKILLS

- the ability to explain course concepts precisely using the professional terminology of the discipline
- the ability to use those concepts to explain practical and empirical (case based) contexts

COMPETENCES

- should be able to formulate, develop and present their own software-related business ideas to a qualified audience.

TYPE OF INSTRUCTION

The teaching is organized according to the general teaching methods for the education, cf. chapter 3

EXTENT AND EXPECTED WORKLOAD

It is expected that the student uses 30 hours per ECTS, which for this activity means 150 hours

EXAM

EXAMS

Name of exam	Entrepreneurship
Type of exam	Written or oral exam
ECTS	5
Assessment	Passed/Not Passed
Type of grading	Internal examination

Criteria of assessment	As indicated in the Faculty evaluation criteria
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ADDITIONAL INFORMATION

Contact: The Study board for Computer Science at cs-sn@cs.aau.dk or 9940 8854

FACTS ABOUT THE MODULE

Danish title	Entreprenørskab
Module code	DSNDATFK302
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	Danish and English
Empty-place Scheme	Yes
Location of the lecture	Campus Aalborg
Responsible for the module	Lone Leth Thomsen

ORGANISATION

Study Board	Study Board of Computer Science
Department	Department of Computer Science
Faculty	Technical Faculty of IT and Design

KANDIDATSPECIALE

2018/2019

MODULETS INDHOLD, FORLØB OG PÆDAGOGIK

FORMÅL

At den studerende selvstændigt, systematisk og kritisk gennem anvendelse af videnskabelig teori og metode kan formulere, analysere og bidrage til løsning af et aktuelt forskningsproblem inden for datalogi

BEGRUNDELSE

Universitetsuddannelser er forskningsbaserede uddannelser; alle studerende skal på kandidatuddannelsen opnå dybtgående indsigt i forskningens aktuelle problemstilling og metoder, således at denne indsigt kan bringes til anvendelse i løsning af problemer inden for forskning

LÆRINGSMÅL

VIDEN

- dokumentere dybtgående kendskab til og overblik over en aktuell problemstilling inden for datalogisk forskning og dennes mulige løsninger

FÆRDIGHEDER

- ræsonnere om og med de berørte begreber og teknikker
- anvende og skabe teoridannelser inden for fagområdet i forbindelse med formulering af og analyse og løsning af et problem inden for datalogisk forskning
- formidle en aktuell datalogisk problemstilling, et bidrag til dens løsning og det tilhørende begrebsapparat inden for forskningsområdets rammer

KOMPETENCER

- anvende begreberne og ræsonnementerne inden for fagområdet til at formulere, analysere og bidrage til løsning af et problem inden for en aktuell problemstilling i datalogisk forskning

UNDERVISNINGSFORM

Projektarbejde, der skal omfatte:

- formulering, analyse og bidrag til løsning af et aktuelt forskningsproblem, normalt inden for det område af datalogi, som var emnet for projektmodulet på 3. semester af KA

OMFANG OG FORVENTET ARBEJDSINDSAT

Det forventes at den studerende bruger 30 timer per ECTS, hvilket for denne aktivitet betyder 900 timer.

EKSAMEN

PRØVER

Prøvens navn	Kandidatspeciale
Prøveform	Mundtlig pba. projekt
ECTS	30

Bedømmelsesform	7-trins-skala
Censur	Ekstern prøve
Vurderingskriterier	Som angivet i Fakultets vurderingskriterier http://www.tech.aau.dk/digitalAssets/337/337434_vurderingskriterier.pdf

YDERLIGERE INFORMATIONER

Kontakt: Studienævn for datalogi via cs-sn@cs.aau.dk eller 9940 8854

FAKTA OM MODULET

Engelsk titel	Master's Thesis
Modulkode	DSNDATFK401
Modultype	Projekt
Varighed	1 semester
Semester	Forår
ECTS	30
Undervisningssprog	Dansk
Undervisningssted	Campus Aalborg
Modulansvarlig	Lone Leth Thomsen

ORGANISATION

Studienævn	Studienævnet for Datalogi
Institut	Institut for Datalogi
Fakultet	Det Tekniske Fakultet for IT og Design

ADVANCED TOPICS IN DATABASES

2018/2019

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

The student will acquire knowledge on the following topics in advanced databases:

- concepts and techniques in multidimensional databases, such as data warehousing, On-Line Analytical Processing, and Data Mining
- concepts and techniques in spatial and spatiotemporal databases, including indexing and processing of queries
- concepts and techniques of complex data in databases, such as XML, Semantic Web, etc

There will also be one or more optional subjects within data-intensive systems, including (but not limited to):

- concepts and techniques in temporal databases

SKILLS

- able to explain concepts and techniques in advanced databases
- able to identify and discuss relevant concepts and techniques for a given problem in advanced databases
- able to apply relevant concepts and techniques for a given problem in advanced databases

COMPETENCES

- able to apply concepts and techniques from advanced databases, including the design and implementation of advanced databases

TYPE OF INSTRUCTION

The teaching is organized according to the general teaching methods for the education, cf. chapter 3

EXTENT AND EXPECTED WORKLOAD

It is expected that the student uses 30 hours per ECTS, which for this activity means 150 hours

EXAM

EXAMS

Name of exam	Advanced Topics in Databases
Type of exam	Written or oral exam
ECTS	5
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	Are stated in the Joint Programme Regulations

ADDITIONAL INFORMATION

Contact: The Study board for Computer Science at cs-sn@cs.aau.dk or 9940 8854

FACTS ABOUT THE MODULE

Danish title	Avancerede emner inden for databaser
Module code	DSNDATFK102
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	Danish and English
Empty-place Scheme	Yes
Location of the lecture	Campus Aalborg
Responsible for the module	Lone Leth Thomsen

ORGANISATION

Study Board	Study Board of Computer Science
Department	Department of Computer Science
Faculty	Technical Faculty of IT and Design

ADVANCED TOPICS IN DISTRIBUTED SYSTEMS

2018/2019

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

The student will gain knowledge of advanced theories and methods in distributed systems:

- advanced infrastructures and applications for example. grid, cloud, peer-to-peer, or parallel / multi-core systems
- System and Network software for embedded systems
- examples of distributed embedded systems, such as ad-hoc sensor networks, home automation
- Distributed algorithms such as algorithms for mutual exclusion, selection, consensus, replication and fault tolerance
- paradigms of programming
- techniques for analysis, such as monitoring, testing, verification, and benchmarking

SKILLS

- able to assess and explain precisely how and to what extent the results presented can be used using the appropriate subject terminology and notation,
- use appropriate writing skills in these contexts

COMPETENCES

- be able to apply concepts and techniques from distributed systems, and to design and analyze distributed and embedded systems.

TYPE OF INSTRUCTION

The teaching is organized according to the general teaching methods for the education, cf. chapter 3

EXTENT AND EXPECTED WORKLOAD

It is expected that the student uses 30 hours per ECTS, which for this activity means 150 hours

EXAM

EXAMS

Name of exam	Advanced Topics in Distributed Systems
Type of exam	Written or oral exam
ECTS	5
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	Are stated in the Joint Programme Regulations

ADDITIONAL INFORMATION

Contact: The Study board for Computer Science at cs-sn@cs.aau.dk or 9940 8854

FACTS ABOUT THE MODULE

Danish title	Avancerede emner inden for distribuerede systemer
Module code	DSNDATFK103
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	Danish and English
Empty-place Scheme	Yes
Location of the lecture	Campus Aalborg
Responsible for the module	Lone Leth Thomsen

ORGANISATION

Study Board	Study Board of Computer Science
Department	Department of Computer Science
Faculty	Technical Faculty of IT and Design

ADVANCED TOPICS IN HUMAN-COMPUTER INTERACTION

2018/2019

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

The student will gain knowledge in advanced topics in human-machine interaction in theory or practice. The items may include, but are not limited to:

- concepts, methods and techniques in advanced interaction design
- concepts, methods and techniques in advanced usability evaluation

SKILLS

The student must achieve the following skills within the course subject matter:

- able to explain issues, theory, methods, results and conclusions in an accurately and profound way
- be able to apply theories and methods to solve a specific problem
- have a critical approach to theories and methods in human-computer interaction

COMPETENCES

- be able to apply concepts, techniques and methods to understand a given problem and to design and evaluate a practical system.

TYPE OF INSTRUCTION

The teaching is organized according to the general teaching methods for the education, cf. chapter 3

EXTENT AND EXPECTED WORKLOAD

It is expected that the student uses 30 hours per ECTS, which for this activity means 150 hours

EXAM

EXAMS

Name of exam	Advanced Topics in Human-Computer Interaction
Type of exam	Written or oral exam
ECTS	5
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	Are stated in the Joint Programme Regulations

ADDITIONAL INFORMATION

Contact: The Study board for Computer Science at cs-sn@cs.aau.dk or 9940 8854

FACTS ABOUT THE MODULE

Danish title	Avancerede emner inden for menneske-maskine interaktion
Module code	DSNDATFK104
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	Danish and English
Empty-place Scheme	Yes
Location of the lecture	Campus Aalborg
Responsible for the module	Lone Leth Thomsen

ORGANISATION

Study Board	Study Board of Computer Science
Department	Department of Computer Science
Faculty	Technical Faculty of IT and Design

ADVANCED TOPICS IN MODELING AND VERIFICATION

2018/2019

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

- Students should achieve knowledge of recent research on advanced mathematical models for the formal description and verification of programmes, software systems and programming languages. E.g. Binary Decision Diagrams (BDD), SAT-algorithms, predicate logic, Petri nets, temporal logic and mobile process calculi.

SKILLS

- the ability to explain course concepts and important theories precisely using the terminology and notation of the discipline
- apply methods for specification and verification based on formal models
- be able to make use of the necessary writing skills in these contexts

COMPETENCES

- be able to use formal models and associated verification tools for description, analysis and verification of software systems.

TYPE OF INSTRUCTION

The teaching is organized according to the general teaching methods for the education, cf. chapter 3

EXTENT AND EXPECTED WORKLOAD

It is expected that the student uses 30 hours per ECTS, which for this activity means 150 hours

EXAM

EXAMS

Name of exam	Advanced Topics in Modeling and Verification
Type of exam	Written or oral exam
ECTS	5
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	Are stated in the Joint Programme Regulations

ADDITIONAL INFORMATION

Contact: The Study board for Computer Science at cs-sn@cs.aau.dk or 9940 8854

FACTS ABOUT THE MODULE

Danish title	Avancerede emner inden for modellering og verifikation
Module code	DSNDATFK202
Module type	Course
Duration	1 semester
Semester	Spring
ECTS	5
Language of instruction	Danish and English
Empty-place Scheme	Yes
Location of the lecture	Campus Aalborg
Responsible for the module	Lone Leth Thomsen

ORGANISATION

Study Board	Study Board of Computer Science
Department	Department of Computer Science
Faculty	Technical Faculty of IT and Design

ADVANCED TOPICS IN MACHINE INTELLIGENCE

2018/2019

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

gain knowledge of advanced topics dealing with methods and application of machine intelligence, e.g.:

- advanced techniques in data mining
- advanced methods for reasoning and decision making under uncertainty
- agent-based design of intelligent systems
- intelligent web-based systems

SKILLS

- achieve skills to identify and use advanced techniques from machine intelligence for constructing intelligent systems

COMPETENCES

- be able to understand advanced methods for the design of intelligent systems and to analyze their applicability and efficacy in solving specific tasks.

TYPE OF INSTRUCTION

The teaching is organized according to the general teaching methods for the education, cf. chapter 3

EXTENT AND EXPECTED WORKLOAD

It is expected that the student uses 30 hours per ECTS, which for this activity means 150 hours

EXAM

EXAMS

Name of exam	Advanced Topics in Machine Intelligence
Type of exam	Written or oral exam
ECTS	5
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	Are stated in the Joint Programme Regulations

ADDITIONAL INFORMATION

Contact: The Study board for Computer Science at cs-sn@cs.aau.dk or 9940 8854

FACTS ABOUT THE MODULE

Danish title	Avancerede emner inden for maskintelligens
Module code	DSNDATFK203
Module type	Course
Duration	1 semester
Semester	Spring
ECTS	5
Language of instruction	Danish and English
Empty-place Scheme	Yes
Location of the lecture	Campus Aalborg
Responsible for the module	Lone Leth Thomsen

ORGANISATION

Study Board	Study Board of Computer Science
Department	Department of Computer Science
Faculty	Technical Faculty of IT and Design

AVANCEREDE EMNER INDEN FOR SYSTEMUDVIKLING

2018/2019

FORUDSÆTNINGER/ANBEFALEDE FORUDSÆTNINGER FOR AT DELTAGE I MODULET

I nogle tilfælde relevante dele af læringsmålene fra udbudte kurser på de adgangsgivende bacheloruddannelser. Disse forudsætninger kan opnås i starten af kurset gennem særlige aktiviteter integreret i kurset.

MODULETS INDHOLD, FORLØB OG PÆDAGOGIK

LÆRINGSMÅL

VIDEN

Inden for systemudvikling i teori og praksis Emnerne kan omfatte men er ikke begrænset til:

- analyse af systemudviklingspraksis
- systemudviklingsmetoder, -processer og -kompetencer
- organisation og ledelse af systemudvikling
- udvikling af systemer til komplekse sammenhænge, f.eks. understøttelse af samarbejde i organisationer, vidensintensive systemer og informationsinfrastruktur

FÆRDIGHEDER

- kunne forstå samt præsentere kursets emner herunder præmisser, problemstillinger, teorier, metoder, resultater og konklusioner
- kunne anvende teorier og metoder til at analysere og beskrive en problemstilling i praktisk systemudvikling
- forholde sig kritisk til teorier og metoder inden for systemudvikling

KOMPETENCER

Kunne beskrive, analysere og vurdere en konkret praksis i en systemudviklingsvirksomhed herunder:

- relatere til kursets teorier og empiriske metoder
- perspektivere i forhold til udvalgte emner som: kravstyring, kvalitetsstyring, outsourcing, distribueret udvikling, agile processer, og model-drevne processer

UNDERVISNINGSFORM

Undervisningen tilrettelægges i henhold til de generelle undervisningsformer for uddannelsen, jf. kapitel 3

OMFANG OG FORVENTET ARBEJDSINDSAT

Det forventes at den studerende bruger 30 timer per ECTS, hvilket for denne aktivitet betyder 150 timer.

EKSAMEN

PRØVER

Prøvens navn	Avancerede emner inden for systemudvikling
Prøveform	Skriftlig eller mundtlig
ECTS	5
Bedømmelsesform	7-trins-skala

Censur	Intern prøve
Vurderingskriterier	Som angivet i Fakultets vurderingskriterier http://www.tech.aau.dk/digitalAssets/337/337434_vurderingskriterier.pdf

YDERLIGERE INFORMATIONER

Kontakt: Studienævn for datalogi via cs-sn@cs.aau.dk eller 9940 8854

FAKTA OM MODULET

Engelsk titel	Advanced Topics in Systems Development
Modulkode	DSNDATFK204
Modultype	Kursus
Varighed	1 semester
Semester	Forår
ECTS	5
Tomplads	Ja
Undervisningssted	Campus Aalborg
Modulansvarlig	Lone Leth Thomsen

ORGANISATION

Studienævn	Studienævnet for Datalogi
Institut	Institut for Datalogi
Fakultet	Det Tekniske Fakultet for IT og Design

SPECIALISATION COURSE IN DATABASE TECHNOLOGY

2018/2019

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

- achieve in-depth insight into key issues in contemporary research in database technology.

SKILLS

Based on a scientific article in the course's central themes, the student should be able to:

- give a clear and understandable presentation of the article's key issues, including its premises, problem(s), theory, methods, results and conclusions
- explain relevant / key theories, methods, and arguments presented in the article

COMPETENCES

Based on a scientific article in the course's central themes, the student should be able to:

- relate the theories, methods, and results presented in the article to the course topics
- assess the proposed solutions, results and/or conclusions of the article as well as assess their qualities and practicality and put them into perspective.

TYPE OF INSTRUCTION

The teaching is organized according to the general teaching methods for the education, cf. chapter 3

EXTENT AND EXPECTED WORKLOAD

It is expected that the student uses 30 hours per ECTS, which for this activity means 150 hours

EXAM

EXAMS

Name of exam	Specialisation Course in Database Technology
Type of exam	Oral exam The student gives a lecture of 30 minutes on a defined scientific subject area (typically in the form of an article) in relation to issues addressed in the course. The selection of subject area and the framing of the task to each student are made by the course lecturer, usually in consultation with the student's project supervisor. The student is given 7 days of preparation. After the lecture, the examiner and censor can ask questions related to the student's presentation of the theme. This does not normally exceed 10 minutes.
ECTS	5
Assessment	7-point grading scale

Type of grading	External examination
Criteria of assessment	Are stated in the Joint Programme Regulations

ADDITIONAL INFORMATION

Contact: The Study board for Computer Science at cs-sn@cs.aau.dk or 9940 8854

FACTS ABOUT THE MODULE

Danish title	Specialiseringskursus i databaseteknologi
Module code	DSNDATFK303
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	Danish and English
Empty-place Scheme	Yes
Location of the lecture	Campus Aalborg
Responsible for the module	Lone Leth Thomsen

ORGANISATION

Study Board	Study Board of Computer Science
Department	Department of Computer Science
Faculty	Technical Faculty of IT and Design

SPECIALISATION COURSE IN DISTRIBUTED SYSTEMS

2018/2019

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

- achieve in-depth insight into key issues in contemporary research in distributed systems.

SKILLS

Based on a scientific article in the course's central themes, the student should be able to:

- give a clear and understandable presentation of the article's key issues, including its premises, problem(s), theory, methods, results and conclusions
- explain relevant / key theories, methods, and arguments presented in the article

COMPETENCES

Based on a scientific article in the course's central themes, the student should be able to:

- relate the theories, methods, and results presented in the article to the course topics
- assess the proposed solutions, results and/or conclusions of the article as well as assess their qualities and practicality and put them into perspective.

TYPE OF INSTRUCTION

The teaching is organized according to the general teaching methods for the education, cf. chapter 3

EXTENT AND EXPECTED WORKLOAD

It is expected that the student uses 30 hours per ECTS, which for this activity means 150 hours

EXAM

EXAMS

Name of exam	Specialisation Course in Distributed Systems
Type of exam	Oral exam The student gives a lecture of 30 minutes on a defined scientific subject area (typically in the form of an article) in relation to issues addressed in the course. The selection of subject area and the framing of the task to each student are made by the course lecturer, usually in consultation with the student's project supervisor. The student is given 7 days of preparation. After the lecture, the examiner and censor can ask questions related to the student's presentation of the theme. This does not normally exceed 10 minutes.
ECTS	5
Assessment	7-point grading scale
Type of	External examination

grading	
Criteria of assessment	Are stated in the Joint Programme Regulations

ADDITIONAL INFORMATION

Contact: The Study board for Computer Science at cs-sn@cs.aau.dk or 9940 8854

FACTS ABOUT THE MODULE

Danish title	Specialiseringskursus i distribuerede systemer
Module code	DSNDATFK304
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	Danish and English
Empty-place Scheme	Yes
Location of the lecture	Campus Aalborg
Responsible for the module	Lone Leth Thomsen

ORGANISATION

Study Board	Study Board of Computer Science
Department	Department of Computer Science
Faculty	Technical Faculty of IT and Design

SPECIALISATION COURSE IN HUMAN-COMPUTER INTERACTION

2018/2019

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

- achieve in-depth insight into key issues in contemporary research in human-computer interaction

SKILLS

Based on a scientific article in the course's central themes, the student should be able to:

- give a clear and understandable presentation of the article's key elements, including its premises, issue(s), theory, methods, results and conclusions
- explain relevant theories, methods and arguments presented in the article

COMPETENCES

Based on a scientific article in the course's central themes, the student should be able to:

- relate the theories, methods and results presented in the article to the course topics
- assess the proposed solutions, results and/or conclusions of the article as well as assess their qualities and practicality and put them into perspective.

EXTENT AND EXPECTED WORKLOAD

It is expected that the student uses 30 hours per ECTS, which for this activity means 150 hours

EXAM

EXAMS

Name of exam	Specialisation Course in Human-Computer Interaction
Type of exam	Oral exam The student gives a lecture of 30 minutes on a defined scientific subject area (typically in the form of an article) in relation to issues addressed in the course. The selection of subject area and the framing of the task to each student are made by the course lecturer, usually in consultation with the student's project supervisor. The student is given 7 days of preparation. After the lecture, the examiner and censor can ask questions related to the student's presentation of the theme. This does not normally exceed 10 minutes.
ECTS	5
Assessment	7-point grading scale
Type of grading	External examination

Criteria of assessment	As indicated in the Faculty evaluation criteria
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ADDITIONAL INFORMATION

Contact: The Study board for Computer Science at cs-sn@cs.aau.dk or 9940 8854

FACTS ABOUT THE MODULE

Danish title	Specialiseringskursus i menneske-maskine interaktion
Module code	DSNDATFK305
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	Danish
Empty-place Scheme	Yes
Location of the lecture	Campus Aalborg
Responsible for the module	Lone Leth Thomsen

ORGANISATION

Study Board	Study Board of Computer Science
Department	Department of Computer Science
Faculty	Technical Faculty of IT and Design

SPECIALISATION COURSE IN SEMANTIC AND VERIFICATION

2018/2019

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

- achieve in-depth insight into key issues in contemporary research in mathematical models for formal description and verification of programmes, software systems and programming languages.

SKILLS

Based on a scientific article in the course's central themes, the student should be able to:

- give a clear and understandable presentation of the article's key issues, including its premises, problem(s), theory, methods, results and conclusions
- explain relevant / key theories, methods, and arguments presented in the article

COMPETENCES

Based on a scientific article in the course's central themes, the student should be able to:

- relate the theories, methods, and results presented in the article to the course topics
- assess the proposed solutions, results and/or conclusions of the article as well as assess their qualities and practicality and put them into perspective.

TYPE OF INSTRUCTION

The teaching is organized according to the general teaching methods for the education, cf. chapter 3

EXTENT AND EXPECTED WORKLOAD

It is expected that the student uses 30 hours per ECTS, which for this activity means 150 hours

EXAM

EXAMS

Name of exam	Specialisation Course in Semantic and Verification
Type of exam	Oral exam The student gives a lecture of 30 minutes on a defined scientific subject area (typically in the form of an article) in relation to issues addressed in the course. The selection of subject area and the framing of the task to each student are made by the course lecturer, usually in consultation with the student's project supervisor. The student is given 7 days of preparation. After the lecture, the examiner and censor can ask questions related to the student's presentation of the theme. This does not normally exceed 10 minutes.
ECTS	5

Assessment	7-point grading scale
Type of grading	External examination
Criteria of assessment	Are stated in the Joint Programme Regulations

ADDITIONAL INFORMATION

Contact: The Study board for Computer Science at cs-sn@cs.aau.dk or 9940 8854

FACTS ABOUT THE MODULE

Danish title	Specialiseringskursus i semantik og verifikation
Module code	DSNDATFK306
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	Danish and English
Empty-place Scheme	Yes
Location of the lecture	Campus Aalborg
Responsible for the module	Lone Leth Thomsen

ORGANISATION

Study Board	Study Board of Computer Science
Department	Department of Computer Science
Faculty	Technical Faculty of IT and Design

SPECIALISATION COURSE IN MACHINE INTELLIGENCE

2018/2019

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

- achieve in-depth insight into key issues in contemporary research in machine intelligence, such as datamining and machine learning, graphical models, and intelligent web systems.

SKILLS

Based on a scientific article in the course's central themes, the student should be able to:

- give a clear and understandable presentation of the article's key issues, including its premises, problem(s), theory, methods, results, and conclusions
- explain relevant / key theories, methods, and arguments presented in the article

COMPETENCES

Based on a scientific article in the course's central themes, the student should be able to:

- relate the theories, methods, and results presented in the article to the course topics
- assess the proposed solutions, results and/or conclusions of the article as well as assess their qualities and practicality and put them into perspective.

TYPE OF INSTRUCTION

The teaching is organized according to the general teaching methods for the education, cf. chapter 3

EXTENT AND EXPECTED WORKLOAD

It is expected that the student uses 30 hours per ECTS, which for this activity means 150 hours

EXAM

EXAMS

Name of exam	Specialisation Course in Machine Intelligence
Type of exam	Oral exam The student gives a lecture of 30 minutes on a defined scientific subject area (typically in the form of an article) in relation to issues addressed in the course. The selection of subject area and the framing of the task to each student are made by the course lecturer, usually in consultation with the student's project supervisor. The student is given 7 days of preparation. After the lecture, the examiner and censor can ask questions related to the student's presentation of the theme. This does not normally exceed 10 minutes.
ECTS	5
Assessment	7-point grading scale

Type of grading	External examination
Criteria of assessment	Are stated in the Joint Programme Regulations

ADDITIONAL INFORMATION

Contact: The Study board for Computer Science at cs-sn@cs.aau.dk or 9940 8854

FACTS ABOUT THE MODULE

Danish title	Specialiseringskursus i maskinintelligens
Module code	DSNDATFK307
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	Danish and English
Empty-place Scheme	Yes
Location of the lecture	Campus Aalborg
Responsible for the module	Lone Leth Thomsen

ORGANISATION

Study Board	Study Board of Computer Science
Department	Department of Computer Science
Faculty	Technical Faculty of IT and Design

SPECIALISATION COURSE IN SYSTEMS DEVELOPMENT

2018/2019

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

- achieve in-depth insight into key issues in contemporary research in systems development.

SKILLS

Based on a scientific article in the course's central themes, the student should be able to:

- give a clear and understandable presentation of the article's key elements, including its premises, issue(s), theory, methods, results and conclusions
- explain relevant theories, methods and arguments presented in the article

COMPETENCES

Based on a scientific article in the course's central themes, the student should be able to:

- relate the theories, methods and results presented in the article to the course topics
- assess the proposed solutions, results and/or conclusions of the article as well as assess their qualities and practicality and put them into perspective.

TYPE OF INSTRUCTION

The teaching is organized according to the general teaching methods for the education, cf. chapter 3

EXTENT AND EXPECTED WORKLOAD

It is expected that the student uses 30 hours per ECTS, which for this activity means 150 hours

EXAM

EXAMS

Name of exam	Specialisation Course in Systems Development
Type of exam	Oral exam The student gives a lecture of 30 minutes on a defined scientific subject area (typically in the form of an article) in relation to issues addressed in the course. The selection of subject area and the framing of the task to each student are made by the course lecturer, usually in consultation with the student's project supervisor. The student is given 7 days of preparation. After the lecture, the examiner and censor can ask questions related to the student's presentation of the theme. This does not normally exceed 10 minutes.
ECTS	5
Assessment	7-point grading scale

Type of grading	External examination
Criteria of assessment	As indicated in the Faculty evaluation criteria

ADDITIONAL INFORMATION

Contact: The Study board for Computer Science at cs-sn@cs.aau.dk or 9940 8854

FACTS ABOUT THE MODULE

Danish title	Specialiseringskursus i systemudvikling
Module code	DSNDATFK308
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	Danish and English
Empty-place Scheme	Yes
Location of the lecture	Campus Aalborg
Responsible for the module	Lone Leth Thomsen

ORGANISATION

Study Board	Study Board of Computer Science
Department	Department of Computer Science
Faculty	Technical Faculty of IT and Design

SPECIALISATION COURSE IN PROGRAMMING TECHNOLOGY

2018/2019

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

- achieve in-depth insight into key issues in contemporary research in programming technology.

SKILLS

Based on a scientific article in the course's central themes, the student should be able to:

- give a clear and understandable presentation of the article's key issues, including its premises, problem(s), theory, methods, results and conclusions
- explain relevant / key theories, methods, and arguments presented in the article

COMPETENCES

Based on a scientific article in the course's central themes, the student should be able to:

- relate the theories, methods, and results presented in the article to the course topics
- assess the proposed solutions, results and/or conclusions of the article as well as assess their qualities and practicality and put them into perspective.

TYPE OF INSTRUCTION

The teaching is organized according to the general teaching methods for the education, cf. chapter 3

EXTENT AND EXPECTED WORKLOAD

It is expected that the student uses 30 hours per ECTS, which for this activity means 150 hours

EXAM

EXAMS

Name of exam	Specialisation Course in Programming Technology
Type of exam	Oral exam The student gives a lecture of 30 minutes on a defined scientific subject area (typically in the form of an article) in relation to issues addressed in the course. The selection of subject area and the framing of the task to each student are made by the course lecturer, usually in consultation with the student's project supervisor. The student is given 7 days of preparation. After the lecture, the examiner and censor can ask questions related to the student's presentation of the theme. This does not normally exceed 10 minutes.
ECTS	5
Assessment	7-point grading scale

Type of grading	External examination
Criteria of assessment	Are stated in the Joint Programme Regulations

ADDITIONAL INFORMATION

Contact: The Study board for Computer Science at cs-sn@cs.aau.dk or 9940 8854

FACTS ABOUT THE MODULE

Danish title	Specialiseringskursus i programmeringsteknologi
Module code	DATDSNFK309
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	Danish and English
Empty-place Scheme	Yes
Location of the lecture	Campus Aalborg
Responsible for the module	Lone Leth Thomsen

ORGANISATION

Study Board	Study Board of Computer Science
Department	Department of Computer Science
Faculty	Technical Faculty of IT and Design