AALBORG UNIVERSITET

STUDIEORDNING FOR KANDIDATUDDANNELSEN (CAND.TECH.) I BYGNINGERS ENERGIDESIGN, 2015.

CAND.TECH.
AALBORG

MODULER SOM INDGÅR I STUDIEORDNINGEN

INDHOLDSFORTEGNELSE

BYGNINGENS ENERGIFORBRUG OG INDEKLIMA

2018/2019

FORUDSÆTNINGER/ANBEFALEDE FORUDSÆTNINGER FOR AT DELTAGE I MODULET

Prerequisites:

Introduction to PBL, Heat and Moisture Transport in Building, Indoor Environmental Quality, Building Energy Modelling

MODULETS INDHOLD, FORLØB OG PÆDAGOGIK

Objective:

Students who complete the module:

LÆRINGSMÅL

VIDEN

Knowledge:

- Must be able to understand methods to evaluate the interplay between the indoor environment, heat and moisture transport and energy consumption of a building
- Must have knowledge of essential standards within indoor environment and energy

FÆRDIGHEDER

Skills:

- Must be able to apply proper terminology
- Must be able to set up functional requirements regarding the indoor environment of a building
- Must be able to measure the indoor environmental quality and energy consumption of a building
- Must be able to carry out dimensioning of the building envelope regarding moisture
- Must be able to apply methods to analyse the interplay between the indoor environment, heat and moisture transport
- Must be able to analyse the building envelope in order to minimize the energy consumption
- Must be able to carry through and document energy calculation on a professional level

KOMPETENCER

Competencies:

- Must be able to apply proper terminology in oral, written and graphical communication and documentation of problems and solutions within indoor environment end building energy
- Must be able to communicate the results of the project work in a project report
- Must be able to contribute successfully to teamwork within the problem area and make a common presentation of the result of the project work

UNDERVISNINGSFORM

Type of instruction:

Project work with supervision possibly supplemented with instructions, workshops, presentation seminars, lab tests, etc.

OMFANG OG FORVENTET ARBEJDSINDSATS

The module is 15 ECTS which is corresponding to 450 hours of study.

EKSAMEN

PRØVER

Prøvens navn	Bygningens energiforbrug og indeklima
Prøveform	Mundtlig pba. projekt Exam format: Oral exam based on presentation seminar and project rapport.
ECTS	15
Bedømmelsesform	7-trins-skala
Censur	Intern prøve
Vurderingskriterier	Evaluation criteria: Are stated in the Framework Provisions. http://www.engineering.aau.dk/digitalAssets/332/332984_faellesbestemmelser_230617.pdf

FAKTA OM MODULET

Engelsk titel	Building Energy Use and Indoor Environmental Quality
Modulkode	B-BED-K1G-1
Modultype	Projekt
Varighed	1 semester
Semester	Forår
ECTS	15
Undervisningssprog	Engelsk
Undervisningssted	Campus Aalborg
Modulansvarlig	Michal Zbigniew Pomianowski

ORGANISATION

Studienævn	Studienævnet for Byggeri og Anlæg
Institut	Institut for Byggeri og Anlæg
Fakultet	Det Ingeniør- og Naturvidenskabelige Fakultet

INTRODUKTION TIL PBL, HYGROTERMISK BYGNINGSFYSIK

2018/2019

FORUDSÆTNINGER/ANBEFALEDE FORUDSÆTNINGER FOR AT DELTAGE I MODULET

Prerequisites:

Corresponding to the admission requirements

MODULETS INDHOLD, FORLØB OG PÆDAGOGIK

Objective:

Students who complete the module:

LÆRINGSMÅL

VIDEN

Knowledge:

- Must have knowledge and understanding of project organized problem-based learning
- Must have knowledge about group work/conflicts and ways to solve conflicts
- Must have knowledge and comprehension of planning and structuring the documentation of a project
- Must have knowledge of basic mathematics
- Must be able to understand heat transfer in the building envelope
- Must be able to understand moisture transport in the building envelope
- Must be able to understand rules and calculation methods for building energy consumption
- Must be able to account for the hygro thermal functional demands regarding materials and constructions used in the building envelope

FÆRDIGHEDER

Skills:

- Must be able to apply the project organized learning to actual problem related work in groups
- Must be able to apply systematic methods
- Must be able to set up hygro thermal functional requirements regarding the building envelope and materials
- Must be able to size the building envelope according to hygro thermal functional demands
- Must be able to size the linear thermal transmittance using numerical simulations
- Must be able to conduct a blower door test of a building

KOMPETENCER

Competencies:

- Independently be able to define and analyse scientific problems
- Must be able to establish, evaluate and reflect on models on the essential problems within heat and moisture transport in buildings
- Must be able to apply proper terminology in oral, written and graphical communication and documentation of problems and solutions within sizing the building envelope

UNDERVISNINGSFORM

Type of instruction:

Lectures, etc. supplemented with project work, workshops, presentation seminars, lab tests

OMFANG OG FORVENTET ARBEJDSINDSATS

The module is 5 ECTS which is corresponding to 150 hours of study.

EKSAMEN

PRØVER

Prøvens navn	Introduktion til PBL, Hygrotermisk bygningsfysik
Prøveform	Mundtlig pba. projekt Exam format: Individual oral exam based on presentation seminar and project rapport.
ECTS	5
Bedømmelsesform	7-trins-skala
Censur	Intern prøve
Vurderingskriterier	Evaluation criteria: Are stated in the Framework Provisions. http://www.engineering.aau.dk/digitalAssets/332/332984_faellesbestemmelser_230617.pdf

FAKTA OM MODULET

Engelsk titel	Introduction to PBL, Heat and Moisture Transport in Building
Modulkode	B-BED-K1G-2
Modultype	Kursus
Varighed	1 semester
Semester	Forår
ECTS	5
Undervisningssprog	Engelsk
Undervisningssted	Campus Aalborg
Modulansvarlig	Michal Zbigniew Pomianowski

ORGANISATION

Studienævn	Studienævnet for Byggeri og Anlæg
Institut	Institut for Byggeri og Anlæg
Fakultet	Det Ingeniør- og Naturvidenskabelige Fakultet

ANALYSE OG MÅLING AF INDEKLIMA

2018/2019

FORUDSÆTNINGER/ANBEFALEDE FORUDSÆTNINGER FOR AT DELTAGE I MODULET

Objective:

Students who complete the module:

MODULETS INDHOLD, FORLØB OG PÆDAGOGIK

Objective:

Students who complete the module:

LÆRINGSMÅL

VIDEN

Knowledge:

- Must have knowledge of functional demands regulatory requirements and standards regarding sizing and measuring the indoor environment
- Must have basic knowledge of the factors influencing the indoor environment and be able to asses the importance of the individual factors importance including adaptive comfort and productivity
- Must have knowledge about measuring and calibration technique within indoor environment and building energy

FÆRDIGHEDER

Skills:

- Must be able to conduct an analyse of the interplay between the indoor environment and building energy use
- Must be able to set up functional requirements for the indoor environment
- Must be able to asses the indoor environment according to comfort productivity and energy use
- Must be able to perform relevant measurements of the indoor environment and building energy use

KOMPETENCER

Competencies:

- Must be able to participate in a dialogue regarding optimal choice of indoor environment level compared to building type and use
- Must be able to argue for the chosen level of indoor environment to all parties in the building sector
- Must be able to evaluate and reflect on the measured indoor environment and energy use including the used experimental methods and uncertainty of the measurements

UNDERVISNINGSFORM

Type of instruction:

Lectures, etc. supplemented with project work, workshops, presentation seminars, lab tests

OMFANG OG FORVENTET ARBEJDSINDSATS

The module is 5 ECTS which is corresponding to 150 hours of study.

EKSAMEN

PRØVER

Prøvens navn	Analyse og måling af indeklima
Prøveform	Mundtlig pba. projekt Exam format: Individual oral exam based on presentation seminar and project rapport.
ECTS	5
Bedømmelsesform	7-trins-skala
Censur	Intern prøve
Vurderingskriterier	Evaluation criteria: Are stated in the Framework Provisions. http://www.engineering.aau.dk/digitalAssets/332/332984_faellesbestemmelser_230617.pdf

FAKTA OM MODULET

Engelsk titel	Indoor Environmental Analysis and Measurements
Modulkode	B-BED-K1G-3
Modultype	Kursus
Varighed	1 semester
Semester	Forår
ECTS	5
Undervisningssprog	Engelsk
Undervisningssted	Campus Aalborg
Modulansvarlig	Michal Zbigniew Pomianowski

ORGANISATION

Studienævn	Studienævnet for Byggeri og Anlæg
Institut	Institut for Byggeri og Anlæg
Fakultet	Det Ingeniør- og Naturvidenskabelige Fakultet

ENERGISIMULERING AF BYGNINGER

2018/2019

FORUDSÆTNINGER/ANBEFALEDE FORUDSÆTNINGER FOR AT DELTAGE I MODULET

Prerequisites:

Corresponding to the admission requirements

MODULETS INDHOLD, FORLØB OG PÆDAGOGIK

Objective:

Students who complete the module:

LÆRINGSMÅL

VIDEN

Knowledge:

- Must have knowledge of heat balance of buildings
- Must have knowledge of calculation methodology for building energy use
- Must have knowledge of legislation requirements regarding building energy use
- Must have knowledge of numerical solutions of mathematical problems
- Must be able to account for hygro thermal building simulation

FÆRDIGHEDER

Skills:

- Must be able to set up a steady state heat balance for a building including in and external loads
- Must be able to document the building energy requirements using appropriate methods
- Must be able to perform dynamic simulation of heat flows in building using building energy simulation tools
- Be able to apply advanced simulation methods for analysis and simulation of temperature conditions and heat flows in buildings
- Be able to apply experimental results for verification of the calculated systems, including an estimate of the results with regard to model assumptions and uncertainties

KOMPETENCER

Competences:

- Be able to qualitative quantify the importance of boundary condition, user behaviour and detail level of mathematical models to estimate energy use and indoor environment
- Must be able to discus and evaluate the preconditions and results of building energy use

UNDERVISNINGSFORM

Type of instruction:

Lectures, etc. supplemented with project work, workshops, presentation seminars, lab tests

OMFANG OG FORVENTET ARBEJDSINDSATS

The module is 5 ECTS which is corresponding to 150 hours of study.

EKSAMEN

PRØVER

Prøvens navn	Energisimulering af bygninger
Prøveform	Mundtlig Exam format: Individual oral exam
ECTS	5
Bedømmelsesform	7-trins-skala
Censur	Intern prøve
Vurderingskriterier	Evaluation criteria: As stated in the framework provisions. http://www.engineering.aau.dk/digitalAssets/332/332984_faellesbestemmelser_230617.pdf

FAKTA OM MODULET

Engelsk titel	Building Energy Modelling
Modulkode	B-BED-K1G-4
Modultype	Kursus
Varighed	1 semester
Semester	Forår
ECTS	5
Undervisningssprog	Engelsk
Undervisningssted	Campus Aalborg
Modulansvarlig	Michal Zbigniew Pomianowski

ORGANISATION

Studienævn	Studienævnet for Byggeri og Anlæg
Institut	Institut for Byggeri og Anlæg
Fakultet	Det Ingeniør- og Naturvidenskabelige Fakultet

BYGNINGENS VENTILATION OG INSTALLATIONER

2018/2019

FORUDSÆTNINGER/ANBEFALEDE FORUDSÆTNINGER FOR AT DELTAGE I MODULET

Prerequisites:

Corresponding to having passed the 1st semester

MODULETS INDHOLD, FORLØB OG PÆDAGOGIK

Objective:

Students who complete the module:

LÆRINGSMÅL

VIDEN

Knowledge:

- Must be able to understand the principles and theories behind planning of HVAC systemse
- Must be able to apply methods to analyse the interplay between the indoor environment energy use and HVAC systems
- Must have knowledge of economic calculation of profitability including overall economy consequences of indoor related productivity changes
- Must have knowledge of key standards within building information modelling in the field of HVAC systems

FÆRDIGHEDER

Skills:

- Must be able to apply proper terminology
- Must be able to set up functional demands to the indoor environment and HVAC systems of a building
- Must be able to measure the indoor environmental quality and energy consumption of a building and its systems
- Must be able to design the HVAC systems based on an overall consideration to ensure fulfilment of the building code
- Must be able to analyse the building to minimize the energy use by optimizing the HVAC systems and indoor environment level
- Must be able to analyse the financial profitability of the HVAC solution and the entire building design
- Must be able to use BIM in designing and quality assurance of the HVAC systems

KOMPETENCER

Competencies:

- Must be able to size the indoor environment and HVAC system of a building
- Must be able to argue for the chosen HVAC system in relation to the level of indoor environment to all parties in the building sector
- Must be able to communicate the results of the project work in a project report
- Must be able to contribute successfully to teamwork within the problem area and make a common presentation of the result of the project work

UNDERVISNINGSFORM

Type of instruction:

Project work with supervision possibly supplemented with instructions, workshops, presentation seminars, lab tests, etc.

OMFANG OG FORVENTET ARBEJDSINDSATS

The module is 15 ECTS which is corresponding to 450 hours of study.

EKSAMEN

PRØVER

Prøvens navn	Bygningens ventilation og installationer
Prøveform	Mundtlig pba. projekt Exam format: Oral exam based on presentation seminar and project rapport.
ECTS	15
Bedømmelsesform	7-trins-skala
Censur	Ekstern prøve
Vurderingskriterier	Evaluation criteria: Are stated in the Framework Provisions. http://www.engineering.aau.dk/digitalAssets/332/332984_faellesbestemmelser_230617.pdf

FAKTA OM MODULET

Engelsk titel	Building Ventilation, Heating and Cooling
Modulkode	B-BED-K2G-5
Modultype	Projekt
Varighed	1 semester
Semester	Efterår
ECTS	15
Undervisningssprog	Dansk og engelsk
Undervisningssted	Campus Aalborg
Modulansvarlig	Michal Zbigniew Pomianowski
Censornorm	B

ORGANISATION

Studienævn	Studienævnet for Byggeri og Anlæg
Institut	Institut for Byggeri og Anlæg
Fakultet	Det Ingeniør- og Naturvidenskabelige Fakultet

VENTILATIONSTEKNIK

2018/2019

FORUDSÆTNINGER/ANBEFALEDE FORUDSÆTNINGER FOR AT DELTAGE I MODULET

Prerequisites:

Corresponding to having passed the 1st semester

MODULETS INDHOLD, FORLØB OG PÆDAGOGIK

Objective:

Students who complete the module:

LÆRINGSMÅL

VIDEN

Knowledge:

- Must be able to account for the functional requirements regarding comfort in relation to ventilation
- Must have knowledge about the terminology within ventilation
- Must have knowledge on current standards and regulations within comfort ventialtion
- Must be able to understand the theory on mixing and displacement ventilation
- Must have knowledge on natural and hybrid ventilation
- Must have knowledge on design and balancing of duct systems
- Must have knowledge on choice of components for the ventilation unit
- Must hvar knowledge on noise in relation to ventilation
- Must be able to account in general for the control of ventilation systems
- Must have knowledge on the energy consumption of the individual parts of the ventilation unit
- Must have knowledge on the workflow of a ventilation contract including commissioning and maintenance

FÆRDIGHEDER

Skills:

- Must be able to make an reasoned choice of ventilation principle and system based on the functional requirements and relevant loads
- Must be able to equip and size a ventilation system base on performance requirements
- Must be able to perform an impact assessment regarding the energy use of the system and its components
- Must be able to size a ventilation system base don noise requirements

KOMPETENCER

Competencies:

- Must be able to reflect on the chosen ventilations solution in relation to functional demands and loads
- Must be able to discus and evaluate the optimal choice of ventilation in relation to outdoor and indoor conditions users and the building

UNDERVISNINGSFORM

Type of instruction:

Lectures, etc. supplemented with project work, workshops, presentation seminars, lab tests

OMFANG OG FORVENTET ARBEJDSINDSATS

The module is 5 ECTS which is corresponding to 150 hours of study.

EKSAMEN

PRØVER

Prøvens navn	Ventilationsteknik
Prøveform	Mundtlig pba. projekt Exam format: Individual oral exam based on presentation seminar and project rapport.
ECTS	5
Bedømmelsesform	7-trins-skala
Censur	Intern prøve
Vurderingskriterier	Evaluation criteria: Are stated in the Framework Provisions. http://www.engineering.aau.dk/digitalAssets/332/332984_faellesbestemmelser_230617.pdf

FAKTA OM MODULET

Engelsk titel	Building Ventilation
Modulkode	B-BED-K2G-6
Modultype	Kursus
Varighed	1 semester
Semester	Efterår
ECTS	5
Undervisningssprog	Engelsk
Undervisningssted	Campus Aalborg
Modulansvarlig	Michal Zbigniew Pomianowski

ORGANISATION

Studienævn	Studienævnet for Byggeri og Anlæg
Institut	Institut for Byggeri og Anlæg
Fakultet	Det Ingeniør- og Naturvidenskabelige Fakultet

BYGNINGENS VARME- OG KØLESYSTEMER

2018/2019

FORUDSÆTNINGER/ANBEFALEDE FORUDSÆTNINGER FOR AT DELTAGE I MODULET

Prerequisites:

Corresponding to having passed the 1st semester

MODULETS INDHOLD, FORLØB OG PÆDAGOGIK

Objective:

Students who complete the module:

LÆRINGSMÅL

VIDEN

Knowledge:

- Must understand the basics of water and airflows
- Must understand the physical properties and characteristics of liquids and gases
- Must have knowledge on functional requirements regulations and standards regarding heating and cooling systems
- Must be able to account in general for the system layout and control of heating and cooling systems
- Must be able to explain pressure distribution closed pipe systems
- Must have knowledge on sizing heating and cooling systems

FÆRDIGHEDER

Skills:

- Must be able to calculate the hydrostatic forces
- Must be able to apply the continuity energy and momentum equations
- Must be able to set up functional requirements for heating and cooling systems
- Must be able to size heating and cooling systems
- Must be able to carry out calculation of pressure losses for closed duct systems including pumps
- Must be able to describe the control of the heating system

KOMPETENCER

Competencies:

- Must be able to evaluate different system designs according to a specific building the energy consumption future-orientated maintenance and security of supplies
- Must be able to discus and evaluate the optimal choice of heating and cooling systems

UNDERVISNINGSFORM

Type of instruction:

Lectures, etc. supplemented with project work, workshops, presentation seminars, lab tests

OMFANG OG FORVENTET ARBEJDSINDSATS

The module is 5 ECTS which is corresponding to 150 hours of study.

EKSAMEN

PRØVER

Prøvens navn	Bygningens varme- og kølesystemer
Prøveform	Mundtlig pba. projekt Exam format: Individual oral exam based on presentation seminar and project rapport.
ECTS	5
Bedømmelsesform	7-trins-skala
Censur	Intern prøve
Vurderingskriterier	Evaluation criteria: Are stated in the Framework Provisions. http://www.engineering.aau.dk/digitalAssets/332/332984_faellesbestemmelser_230617.pdf

FAKTA OM MODULET

Engelsk titel	Building Heating and Cooling Systems
Modulkode	B-BED-K2G-7
Modultype	Kursus
Varighed	1 semester
Semester	Efterår
ECTS	5
Undervisningssprog	Engelsk
Undervisningssted	Campus Aalborg
Modulansvarlig	Michal Zbigniew Pomianowski

ORGANISATION

Studienævn	Studienævnet for Byggeri og Anlæg
Institut	Institut for Byggeri og Anlæg
Fakultet	Det Ingeniør- og Naturvidenskabelige Fakultet

STYRING OG ANALYSE AF BYGNINGERS ENERGISYSTEMER

2018/2019

FORUDSÆTNINGER/ANBEFALEDE FORUDSÆTNINGER FOR AT DELTAGE I MODULET

Prerequisites:

Corresponding to having passed the 1st semester

MODULETS INDHOLD, FORLØB OG PÆDAGOGIK

Objective:

Students who complete the module:

LÆRINGSMÅL

VIDEN

Knowledge:

- Must have knowledge on basic control theory, transfer functions, essential strengthening and accuracy of control
- Must have knowledge on feedback control and classical control (P, PI, PID)
- Must have knowledge on models for thermal systems and facilities
- Must have knowledge on state space modelling and control
- Must have knowledge on dynamical modelling and control of HVAC systems

FÆRDIGHEDER

Skills:

- Must be able to perform analysis and simulation of operational conditions of thermal systems and facility functions
- Must be able to setup a numerical model of the control system/design
- Must be able to device and perform control of a building HVAC system
- Must be able to prescribe functional requirements for building systems control

KOMPETENCER

Competencies:

- Must be able to choose and compare different control designs and regulator types
- Must be able to establish evaluate and reflect on control of building energy systems

UNDERVISNINGSFORM

Type of instruction:

Lectures, etc. supplemented with project work, workshops, presentation seminars, lab tests.

OMFANG OG FORVENTET ARBEJDSINDSATS

The module is 5 ECTS which is corresponding to 150 hours of study.

EKSAMEN

PRØVER

Prøvens navn	Styring og analyse af bygningers energisystemer
Prøveform	Skriftlig eller mundtlig Exam format: Individual oral or written exam. Exam format is decided on by start of semester.
ECTS	5
Bedømmelsesform	7-trins-skala
Censur	Intern prøve
Vurderingskriterier	Evaluation criteria: Are stated in the Framework Provisions. http://www.engineering.aau.dk/digitalAssets/332/332984_faellesbestemmelser_230617.pdf

FAKTA OM MODULET

Engelsk titel	Control and Analysis of Building Energy Systems
Modulkode	B-BED-K2G-8
Modultype	Kursus
Varighed	1 semester
Semester	Efterår
ECTS	5
Undervisningssprog	Engelsk
Undervisningssted	Campus Aalborg
Modulansvarlig	Michal Zbigniew Pomianowski

ORGANISATION

Studienævn	Studienævnet for Byggeri og Anlæg
Institut	Institut for Byggeri og Anlæg
Fakultet	Det Ingeniør- og Naturvidenskabelige Fakultet

BYGNINGENS IBRUGTAGNING DRIFT OG MILJØPÅVIRKNING

2018/2019

FORUDSÆTNINGER/ANBEFALEDE FORUDSÆTNINGER FOR AT DELTAGE I MODULET

Prerequisites:

Corresponding to having passed the 2st semester

MODULETS INDHOLD, FORLØB OG PÆDAGOGIK

Objective:

Students who complete the module:

LÆRINGSMÅL

VIDEN

Knowledge:

- Must have knowledge about building Commissioning Operation and Environmental impact
- Must have knowledge about basic architectural design methodology, the integrated design process and integrated building concepts
- Must have knowledge on choice of passive energy technologies in relation to indoor environment, building services and running cost
- Must be able to understand the interplay between microclimate, buildings and operation of their services
- Must be able to understand the interplay between sustainable energy system, building energy demand and renewable energy production

FÆRDIGHEDER

Skills:

- Must be able to apply and combine design methods for energy efficient building design and operation
- Must be able to apply, combine and evaluate advanced methods for analysis of the interplay between energy systems, architectural concepts, building design, building use, outdoor climate and HVAC systems
- Must be able to design a building with focus on operation and reduced running cost

KOMPETENCER

Competencies:

- Must be able to apply proper terminology in oral, written and graphical communication and documentation of problems and solutions within integrated design of buildings and building services.
- Must be able to optimise the operation of buildings based on measurement and analysis of the performance of the building
- Must be able to handle complex and research-oriented cases related to development of and running energy efficient buildings
- Must be able to communicate the results of the project work in a project report
- Must be able to contribute successfully to teamwork within the problem area and make a common presentation of the result of the project work

UNDERVISNINGSFORM

Type of instruction:

Project work with supervision possibly supplemented with instructions, workshops, presentation seminars, lab tests, etc.

OMFANG OG FORVENTET ARBEJDSINDSATS

The module is 15 ECTS which is corresponding to 450 hours of study.

EKSAMEN

PRØVER

Prøvens navn	Bygningens ibrugtagning drift og miljøpåvirkning
Prøveform	Mundtlig pba. projekt Exam format: Oral exam based on presentation seminar and project rapport.
ECTS	15
Bedømmelsesform	7-trins-skala
Censur	Intern prøve
Vurderingskriterier	Evaluation criteria: Are stated in the Framework Provisions. http://www.engineering.aau.dk/digitalAssets/332/332984_faellesbestemmelser_230617.pdf

FAKTA OM MODULET

Engelsk titel	Building Commissioning Operation and Environmental Impact
Modulkode	B-BED-K3G-9
Modultype	Projekt
Varighed	1 semester
Semester	Forår
ECTS	15
Undervisningssprog	Dansk og engelsk
Undervisningssted	Campus Aalborg
Modulansvarlig	Michal Zbigniew Pomianowski

ORGANISATION

Studienævn	Studienævnet for Byggeri og Anlæg
Institut	Institut for Byggeri og Anlæg
Fakultet	Det Ingeniør- og Naturvidenskabelige Fakultet

BÆREDYGTIGE VURDERINGSMETODER OG LCC ANALYSE

2018/2019

FORUDSÆTNINGER/ANBEFALEDE FORUDSÆTNINGER FOR AT DELTAGE I MODULET

Prerequisites:

Corresponding to having passed the 2st semester

MODULETS INDHOLD, FORLØB OG PÆDAGOGIK

Objective:

Students who complete the module:

LÆRINGSMÅL

VIDEN

Knowledge:

- Must have knowledge about the design philosophy and calculation methods which can be used to minimize the environmental impact of a building throughout its life cycle
- Must have knowledge about the energy and environmental assessment of buildings including material production and transportation, building construction, operation, refurbishment, recycling, demolition and removal
- Must have knowledge about sustainable technologies and environmental design concepts
- Must have knowledge about assessment and certification methods for high performance buildings
- Must have knowledge about LCC analysis
- Must have knowledge about Cost Optimization

FÆRDIGHEDER

Skills:

- Must be able to perform a Life Cycle Assessment a building
- Must be able to evaluate buildings by using assessment and certification methods for high performance buildings
- Must be able to perform a LCC analysis
- Must be able to automate basic cost optimization

KOMPETENCER

Competencies:

- Must be able to discuss and reflect on the prospects and limitations of Environmental Assessment Methods and Tools
- Can evaluate methodologies of building certification methods
- Must be able to evaluate and choose between different building designs based on LCC Analysis and Cost Optimization
- Must be able to discuss and reflect on the prospects and limitations of LCC Analysis and Cost Optimization

UNDERVISNINGSFORM

Type of instruction:

Lectures, etc. supplemented with project work, workshops, presentation seminars, lab tests.

OMFANG OG FORVENTET ARBEJDSINDSATS

The module is 5 ECTS which is corresponding to 150 hours of study.

EKSAMEN

PRØVER

Prøvens navn	Bæredygtige vurderingsmetoder og LCC analyse
Prøveform	Skriftlig eller mundtlig Exam format: Individual oral or written exam. Exam format is decided on by start of semester.
ECTS	5
Bedømmelsesform	7-trins-skala
Censur	Intern prøve
Vurderingskriterier	Evaluation criteria: Are stated in the Framework Provisions. http://www.engineering.aau.dk/digitalAssets/332/332984_faellesbestemmelser_230617.pdf

FAKTA OM MODULET

Engelsk titel	Environmental Assessment Methods and LCC Analysis
Modulkode	B-BED-K3G-10
Modultype	Kursus
Varighed	1 semester
Semester	Forår
ECTS	5
Undervisningssprog	Engelsk
Undervisningssted	Campus Aalborg
Modulansvarlig	Michal Zbigniew Pomianowski

ORGANISATION

Studienævn	Studienævnet for Byggeri og Anlæg
Institut	Institut for Byggeri og Anlæg
Fakultet	Det Ingeniør- og Naturvidenskabelige Fakultet

KANDIDATSPECIALE

2018/2019

FORUDSÆTNINGER/ANBEFALEDE FORUDSÆTNINGER FOR AT DELTAGE I MODULET

Prerequisites:

Successful completion of the first three semesters of the master programme.

MODULETS INDHOLD, FORLØB OG PÆDAGOGIK

Objective:

Students who complete the module:

LÆRINGSMÅL

VIDEN

Knowledge:

- Have knowledge and comprehension within the field of the specialization at the highest international level
- Be able to critically evaluate knowledge and identify new scientific problems within the field of the specialization
- Have understanding of implications within the related research area including research ethics

FÆRDIGHEDER

Skills:

- Independently explain choice of scientific theoretical and/or experimental methods
- During the project and when finalising it make an independent and critical estimation of the chosen theories and methods as well as the analyses, results and conclusions
- Be able to apply a wide range of methods in research and development in the field of specialization
- Be able to communicate relevant scientific and professional aspects of project work in a clear and systematic way both to specialists and the public

KOMPETENCER

Competencies:

- Be able to work independently with a project on a specific problem within the field of the specialization at the highest international level
- Independently be able to define and analyse scientific problems and based on that make and state the reasons for the decisions made
- Be competent to solve new and complicated technical problems by the use of advanced mathematics, scientific and technological knowledge
- Be able to evaluate the progress of the project independently and select and include additional literature, experiments or data when needed in order to maintain a scientific basis for the project
- Be able to control complex and unexpected working situations and be able to develop new solutions
- Can independently initiate and implement discipline-specific and interdisciplinary cooperation and assume professional responsibility
- Must be able to communicate the results of the project work in a project report

UNDERVISNINGSFORM

Type of instruction:

Project work with supervision possibly supplemented with instructions, workshops, presentation seminars, lab tests, etc.

OMFANG OG FORVENTET ARBEJDSINDSATS

The module is 45 ECTS which is corresponding to 1200 hours of study.

EKSAMEN

PRØVER

Prøvens navn	Kandidatspeciale - Langt
Prøveform	Speciale/afgangsprojekt Exam format: Oral exam based on presentation seminar and project rapport.
ECTS	30
Bedømmelsesform	7-trins-skala
Censur	Ekstern prøve
Vurderingskriterier	Evaluation criteria: Are stated in the Framework Provisions. http://www.engineering.aau.dk/digitalAssets/332/332984_faellesbestemmelser_230617.pdf

FAKTA OM MODULET

Engelsk titel	Master's Thesis
Modulkode	B-BED-K4G-12
Modultype	Projekt
Varighed	1 semester
Semester	Forår
ECTS	30
Undervisningssprog	Dansk og engelsk
Undervisningssted	Campus Aalborg
Modulansvarlig	Michal Zbigniew Pomianowski
Censornorm	D

ORGANISATION

Studienævn	Studienævnet for Byggeri og Anlæg
Institut	Institut for Byggeri og Anlæg
Fakultet	Det Ingeniør- og Naturvidenskabelige Fakultet

KANDIDATSPECIALE

2018/2019

FORUDSÆTNINGER/ANBEFALEDE FORUDSÆTNINGER FOR AT DELTAGE I MODULET

Prerequisites:

Successful completion of the first three semesters of the master programme.

MODULETS INDHOLD, FORLØB OG PÆDAGOGIK

Objective:

Students who complete the module:

LÆRINGSMÅL

VIDEN

Knowledge:

- Have knowledge and comprehension within the field of the specialization at the highest international level
- Be able to critically evaluate knowledge and identify new scientific problems within the field of the specialization
- Have understanding of implications within the related research area including research ethics

FÆRDIGHEDER

Skills:

- Independently explain choice of scientific theoretical and/or experimental methods
- During the project and when finalising it make an independent and critical estimation of the chosen theories and methods as well as the analyses, results and conclusions
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KOMPETENCER

Competencies:

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- Can independently initiate and implement discipline-specific and interdisciplinary cooperation and assume professional responsibility
- Must be able to communicate the results of the project work in a project report

UNDERVISNINGSFORM

Type of instruction:

Project work with supervision possibly supplemented with instructions, workshops, presentation seminars, lab tests, etc.

OMFANG OG FORVENTET ARBEJDSINDSATS

The module is 45 ECTS which is corresponding to 1200 hours of study.

EKSAMEN

PRØVER

Prøvens navn	Master's Thesis
Prøveform	Speciale/afgangsprojekt Exam format: Oral exam based on presentation seminar and project rapport.
ECTS	45
Bedømmelsesform	7-trins-skala
Censur	Ekstern prøve
Vurderingskriterier	Evaluation criteria: Are stated in the Framework Provisions. http://www.engineering.aau.dk/digitalAssets/332/332984_faellesbestemmelser_230617.pdf

FAKTA OM MODULET

Engelsk titel	Master's Thesis
Modulkode	B-BED-K3G-11
Modultype	Projekt
Varighed	1 semester
Semester	Forår
ECTS	45
Undervisningssprog	Dansk og engelsk
Undervisningssted	Campus Aalborg
Modulansvarlig	Michal Zbigniew Pomianowski
Censornorm	D

ORGANISATION

Studienævn	Studienævnet for Byggeri og Anlæg
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