



AALBORG UNIVERSITET

CURRICULUM FOR THE MASTER'S PROGRAM IN MANAGEMENT IN THE BUILDING INDUSTRY, 2018

MASTER OF SCIENCE (MSC) IN ENGINEERING
AALBORG

MODULES INCLUDED IN THE CURRICULUM

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PROJECT MANAGEMENT AND PRODUCTION IN CONSTRUCTION

2018/2019

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

- Must have knowledge of the collection and analysis of empirical data.
- Must have knowledge of analytical methods for contracting order process.
- Must have knowledge of project management theories and methods.
- Must have knowledge of modelling processes.

SKILLS

- Analyse a construction order process with emphasis on design and manufacturing issues.
- Process empirical project data.
- Explain the production, quality and cost issues in the order process.
- Interpret the relationship between activities in production through the construction of whole models and detailed models that describe these conditions.
- Analyse process flows and value creation.
- Reasoning between the project and the organization's structural, technical and resource building.
- Interpret the interaction between the parties involved in a project or contract manufacturing company's various organizational units.
- Argue by using precise production-related terminology.

COMPETENCES

- Must be able to assess the proposed systems and their sensitivity to changes in e.g. customer demands, regulatory, quality, etc.
- Must be able to establish operational production models. The models can be based on a deterministic, stochastic or heuristic basis.
- Must be able to assess the impact on the company or the project if the current conditions are changed and the supposed changes are implemented. The changes should be evaluated by for example economical, organizational, social and technical consequences.
- Must be able to assess the importance for the company or the project of changing the current situation and introduce the proposed amendment, which must be assessed from e.g. economic, organizational, social and technical consequences.
- Must be able to prepare and reflect on concrete implementation plans
- Must be able to communicate the results obtained from the project work in a project report.
- Must be able to work around the problem field project and make a joint presentation of the project results.

TYPE OF INSTRUCTION

Project work with teacher feedback supplemented with lectures, workshops, presentation seminars and more.

EXTENT AND EXPECTED WORKLOAD

Since it is a 15 ECTS project module, the workload is expected to be 450 hours for the student.

EXAM

EXAMS

Name of exam	Project Management and Production in Construction
Type of exam	Oral exam based on a project Oral examination based on presentation seminar and project report.
ECTS	15
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	As stated in the Joint Programme Regulations. http://www.engineering.aau.dk/uddannelse/studieadministration/

FACTS ABOUT THE MODULE

Danish title	Projektledeelse og produktion i byggeriet
Module code	B-BL-K1-1
Module type	Project
Duration	1 semester
Semester	Autumn
ECTS	15
Language of instruction	English
Location of the lecture	Campus Aalborg
Responsible for the module	Lene Faber Ussing

ORGANISATION

Study Board	Study Board of Civil Engineering
Department	Department of Civil Engineering
Faculty	Faculty of Engineering and Science

MANAGEMENT OF THE CONSTRUCTION PROCESS

2018/2019

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

- Must have knowledge of output descriptions in construction projects.
- Must have knowledge of management roles and management areas, including the authorities.
- Must have knowledge of proactive and reactive conflict
- Must have knowledge of basic logistics for the construction of building projects.
- Must have knowledge of quality and environmental management works carried out at construction sites.
- Must have knowledge of advanced project financial management.
- Must have knowledge of facilities management.

SKILLS

- Must be able to compare different management roles in a construction project and relate these to the phases of the building process.
- Must demonstrate insight in different types of output descriptions and explain their use.
- Must be able to account for the authorities, in connection with the construction of building and construction projects
- Must be able to use various conflict resolution models.
- Must be able to integrate logistical optimisation in the management of building and construction projects.
- Must be able to explain the quality and environmental management systems.
- Must be able to analyse various economic problems in building and construction projects.
- Must be able to integrate facilities management theories in the construction process.

COMPETENCES

- Must be able to understand the different analysis models and have a solid knowledge of the management tasks that occur during the building process.
- Must master a wide range of management areas for both large and small projects. Knowledge gained in this module must be used as skills in project management areas of logistics, economics, risk management, quality and environmental management and facilities management.

TYPE OF INSTRUCTION

Lectures supplemented with workshops, presentation seminars and more.

EXTENT AND EXPECTED WORKLOAD

Since it is a 5 ECTS project module, the workload is expected to be 150 hours for the student.

EXAM

EXAMS

Name of exam	Management of the Construction Process
Type of exam	Written or oral exam Individual oral or written exam
ECTS	5

Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	As stated in the Joint Programme Regulations. http://www.engineering.aau.dk/uddannelse/studieadministration/

FACTS ABOUT THE MODULE

Danish title	Byggeprocessens styringsområder
Module code	B-BL-K1-2
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	English
Location of the lecture	Campus Aalborg
Responsible for the module	Lene Faber Ussing

ORGANISATION

Study Board	Study Board of Civil Engineering
Department	Department of Civil Engineering
Faculty	Faculty of Engineering and Science

FRAMEWORK CONDITIONS OF CONSTRUCTION

2018/2019

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

- Must have knowledge of national and international legislation and contractual relations in connection with the execution of building and construction works.
- Must have knowledge about work environment, including health and safety in the building and construction industry.

SKILLS

- Must be able to demonstrate knowledge of the use of general conditions and tender law as basic national agreement between the construction parties.
- Must be able to demonstrate understanding of different performance descriptions and explain their use.
- Must be able to explain the current national regulation and associated guidelines for quality assurance.
- Must be able to demonstrate knowledge of general international conditions and EU tender law as basic international agreement between construction parties.
- Must be able to describe national and international (EU) legislation on inviting tenders and award of contract in connection with the construction.
- Must be able to describe the building's historic development and ongoing development initiatives including OPP, partnering and use of indicators.
- Must be able to analyse the construction context in connection with general societal trends
- Must be able to use the guidelines and rules about working in construction.
- Must be able to explain labour law.

COMPETENCES

- Must be able to explain the framework of construction.
- Must be able to relate a given project to the framework of construction including the work environment.

TYPE OF INSTRUCTION

Lectures supplemented with workshops, presentation seminars and more.

EXTENT AND EXPECTED WORKLOAD

Since it is a 5 ECTS project module, the workload is expected to be 150 hours for the student.

EXAM

EXAMS

Name of exam	Framework Conditions of Construction
Type of exam	Written or oral exam Individual oral or written exam
ECTS	5
Assessment	7-point grading scale
Type of grading	Internal examination

Criteria of assessment	As stated in the Joint Programme Regulations. http://www.engineering.aau.dk/uddannelse/studieadministration/
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FACTS ABOUT THE MODULE

Danish title	Byggeriets rammebetingelser
Module code	B-BL-K1-3
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	English
Location of the lecture	Campus Aalborg
Responsible for the module	Lene Faber Ussing

ORGANISATION

Study Board	Study Board of Civil Engineering
Department	Department of Civil Engineering
Faculty	Faculty of Engineering and Science

KNOWLEDGE MANAGEMENT IN THE ARCHITECTURE, ENGINEERING AND CONSTRUCTION INDUSTRY

2018/2019

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

- Knowledge representation in theory and practice including conceptual models and data models.
- Basic concepts, technologies and methods for knowledge management.
- Principles, methods and techniques for the design and evaluation of user environments for computer-aided interaction and collaboration, and knowledge exchange.
- The construction process' fundamental ontologies.

SKILLS

- Use various knowledge representation properties and evaluate their practical suitability for modelling of different systems.
- Document knowledge for digital delivery of building models.
- Demonstrate basic knowledge of methods and systems for ICT-supported information and knowledge sharing in the construction process including Semantic Web technologies
- Identify support systems for knowledge management
- Demonstrate how simulation and analysis systems can be integrated with building models
- Perform conceptual modelling in e.g. IDEF0, E-R and UML
- Describe how a system can be implemented in cooperation with end-users, including methods to identify user requirements and evaluation of systems under development

COMPETENCES

- Specify building processes and building functional systems and how these can be modelled on a conceptual and data level.

TYPE OF INSTRUCTION

Lectures supplemented with workshops, presentation seminars and more.

EXTENT AND EXPECTED WORKLOAD

Since it is a 5 ECTS project module, the workload is expected to be 150 hours for the student.

EXAM

EXAMS

Name of exam	Knowledge Management in the Architecture, Engineering and Construction Industry
Type of exam	Written or oral exam Individual oral or written exam
ECTS	5
Assessment	7-point grading scale
Type of grading	Internal examination

Criteria of assessment	As stated in the Joint Programme Regulations. http://www.engineering.aau.dk/uddannelse/studieadministration/
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FACTS ABOUT THE MODULE

Danish title	Byggeriets videnshåndtering
Module code	B-BL-K1-4
Module type	Course
Duration	1 semester
Semester	Autumn
ECTS	5
Language of instruction	English
Location of the lecture	Campus Aalborg
Responsible for the module	Lene Faber Ussing

ORGANISATION

Study Board	Study Board of Civil Engineering
Department	Department of Civil Engineering
Faculty	Faculty of Engineering and Science

INTRODUCTION TO BUILDING INFORMATION MANAGEMENT

2018/2019

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

- Concepts, technologies and methods to analyse and develop models that describe a building's functional systems and components as well as processes in construction.
- Concepts, techniques and methods to develop product and process models in construction
- Methods for management of knowledge and information in construction, including different types of models and data representation.

SKILLS

- Explain the fundamental differences between various types of building models and process models.
- Explain central aspects of model supported collaboration between actors of the construction process.
- Demonstrate knowledge of information standards in the field, including classification systems.
- Demonstrate knowledge of significant national and international initiatives regarding the use of information technology in the construction industry.
- Explain the properties of different information representations and their suitability for modelling of different systems.

COMPETENCES

- The course provides students with a number of basic skills to participate in the implementation of ICT-based systems in construction business.

TYPE OF INSTRUCTION

Lectures and exercises in groups supplemented with workshops, presentation seminars and more.

EXTENT AND EXPECTED WORKLOAD

Since it is a 5 ECTS project module, the workload is expected to be 150 hours for the student.

EXAM

EXAMS

Name of exam	Introduction to Building Information Management
Type of exam	Written or oral exam Individual oral or written exam
ECTS	5
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	As stated in the Joint Programme Regulations. http://www.engineering.aau.dk/uddannelse/studieadministration/

FACTS ABOUT THE MODULE

Danish title	Introduktion til byggeriets informationshåndtering
Module code	B-BL-K2-7
Module type	Course
Duration	1 semester
Semester	Spring
ECTS	5
Language of instruction	English
Location of the lecture	Campus Aalborg
Responsible for the module	Lene Faber Ussing

ORGANISATION

Study Board	Study Board of Civil Engineering
Department	Department of Civil Engineering
Faculty	Faculty of Engineering and Science

DEVELOPMENT OF PROJECT, RISK AND QUALITY MANAGEMENT SYSTEMS IN CONSTRUCTION

2018/2019

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

The course presents the student for selected models and methods used in connection with company and project quality and project management systems. Emphasis is placed on elements targeting the company's development as a whole via tight project management. The student must have knowledge of the theories that describe the following areas:

- Quality management - business processes and supply chain.
- Project planning and management in multi-project environments.
- Models, methods and tools for the development of advanced quality and environmental and project management systems.
- Financial management and Risk management of activities in companies with production orders and long production time.
- Project Risk management and measurement.

The course supports the students in gaining knowledge of how quality, project management and financial management systems can be included as a strategic element in the organisation overall. Also how quality, project management and financial management systems can be integrated with the organisation's other systems. Finally, the focus is on project risk identification and management of order-based production, including how risk management can be used as a strategic business advantage.

SKILLS

- Understand quality management in relation to business and project processes and analyse the organisation's need for quality management with a focus on supply chain, and suggest changes and improvements to all or parts of the system.
- Understand the financial management and risk management of activities in companies with production orders. Including cash management, financial capacity management and calculations for planning and follow-up on the company's order-based production.
- Understand resource-limited project management problems and plan the execution of projects with regards to this.
- Identify and analyse risk factors for the company's project portfolio and understand risk management systems and the use of risk management for strategic purposes.
- Apply advanced methods and models to develop proposals to improve the organisation's existing quality and project management systems.

COMPETENCES

- Must be able to understand the relation between quality management, project management, and financial management and the company's other management systems and relation with suppliers and customers in the value chain.
- Must be able to apply acquired knowledge to build quality and project management systems in companies with order-based production. This is carried out in terms of how such systems interact with the company's core business and the company's other systems, particularly the company's financial management.
- Must be able to apply acquired knowledge on techniques and management systems for contract manufacturing companies.
- Must be able to apply acquired knowledge gained on how to specify projects and the challenges that may arise in project-driven businesses.
- Must be able to apply acquired knowledge gained about how companies develop quality management systems.
- Must be able to analyse risk factors for the company's project portfolio and understand risk management systems and the use of risk management in connection with the organisation's strategy development process.

TYPE OF INSTRUCTION

Lectures supplemented with workshops, presentation seminars and more.

EXTENT AND EXPECTED WORKLOAD

Since it is a 5 ECTS project module, the workload is expected to be 150 hours for the student.

EXAM

EXAMS

Name of exam	Development of Project, Risk and Quality Management Systems in Construction
Type of exam	Written or oral exam Individual oral or written exam
ECTS	5
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	As stated in the Joint Programme Regulations. http://www.engineering.aau.dk/uddannelse/studieadministration/

FACTS ABOUT THE MODULE

Danish title	Udvikling af kvalitets-, risiko- og projektstyringssystemer i byggeri
Module code	B-BL-K2-8
Module type	Course
Duration	1 semester
Semester	Spring
ECTS	5
Language of instruction	English
Location of the lecture	Campus Aalborg
Responsible for the module	Lene Faber Ussing

ORGANISATION

Study Board	Study Board of Civil Engineering
Department	Department of Civil Engineering
Faculty	Faculty of Engineering and Science

STRATEGY AND PERFORMANCE MEASUREMENTS

2018/2019

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

- Must have knowledge of concepts, theories and methods for analysis, development and implementation of the strategy; including the ability to performance measure this by a combination of both economic and non-economic performance of the organisation.

SKILLS

- Apply the learned theories and methods to understand and analyse the company's choice of strategy and performance measurements.
- Assess theoretical and practical problems by developing and implementing changing strategies in established organisations.
- Communicate such issues to other participants of occurring development projects.

COMPETENCES

- Must be able to apply the learned knowledge elements and skills as a staff employee in strategy development projects.
- Must be able to independently contribute constructively and professionally in strategy investigation and development with other professionals.
- Must on the basis of the acquired identify their own needs for further learning and to implement the appropriate organisation hereof.

TYPE OF INSTRUCTION

Lectures supplemented with workshops, presentation seminars and more.

EXTENT AND EXPECTED WORKLOAD

Since it is a 5 ECTS project module, the workload is expected to be 150 hours for the student.

EXAM

EXAMS

Name of exam	Strategy and Performance Measurements
Type of exam	Written or oral exam Individual oral or written exam
ECTS	5
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	As stated in the Joint Programme Regulations. http://www.engineering.aau.dk/uddannelse/studieadministration/

FACTS ABOUT THE MODULE

Danish title	Strategi og performance measurement
Module code	B-BL-K2-9
Module type	Course
Duration	1 semester
Semester	Spring
ECTS	5
Language of instruction	English
Location of the lecture	Campus Aalborg
Responsible for the module	Lene Faber Ussing

ORGANISATION

Study Board	Study Board of Civil Engineering
Department	Department of Civil Engineering
Faculty	Faculty of Engineering and Science

INNOVATION IN CONSTRUCTION

2018/2019

PREREQUISITE/RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

The activity is based upon knowledge obtained at the 1st and 2nd semester.

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

- Knowledge about innovation theories
- Knowledge about innovative initiatives in the building industry
- Knowledge about strategical, tactical and operational management systems
- Knowledge about technical, economic, social or organisational systems and processes in a company or in a network of companies.

SKILLS

- Analyse technical, economic, social or organisational systems and processes in a company or in a network of companies
- Account for the development of technical, economic, social or organisational systems and processes in a company or in a network of companies
- Demonstrate further understanding of the long term development and planning for building industry companies, such as development of new forms of cooperation between the building industry company and other parties in the building industry.
- Demonstrate further understanding of the integration of technical, economical and organisational systems, including correlations between a company's products, markets, production, organisation and management.
- Demonstrate knowledge of drawing up a coherent development plan for a network of companies, for a company as a whole or for selected parts of a company.

COMPETENCES

- Collect and analyse empiric data from one or more companies.
- Assess the coherence between theories, models and knowledge from empiric data.
- Communicate messages clearly to the parties in the building industry
- Reflect and put the results from the project report into perspective and point out strengths, weaknesses and possible improvements.
- Communicate results from the project work in a project report
- Work together with fellow students about the problem area in question and make a common presentation of the results.

TYPE OF INSTRUCTION

Lectures supplemented with workshops, presentation seminars and more.

EXTENT AND EXPECTED WORKLOAD

Since it is a 30 ECTS project module, the workload is expected to be 900 hours for the student.

EXAM

EXAMS

Name of exam	Innovation in Construction
Type of exam	Oral exam based on a project Oral examination based on presentation seminar and project report.
ECTS	30
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	As stated in the Joint Programme Regulations. http://www.engineering.aau.dk/uddannelse/studieadministration/

FACTS ABOUT THE MODULE

Danish title	Innovation i byggeriet
Module code	B-BL-K3-15
Module type	Project
Duration	1 semester
Semester	Autumn
ECTS	30
Language of instruction	English
Location of the lecture	Campus Aalborg
Responsible for the module	Lene Faber Ussing

ORGANISATION

Study Board	Study Board of Civil Engineering
Department	Department of Civil Engineering
Faculty	Faculty of Engineering and Science

SCIENTIFIC PAPER WRITING

2018/2019

PREREQUISITE/RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

The activity is based upon knowledge obtained at the 1st and 2nd semester.

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

- Basic knowledge of scientific methods used in essay writing.

SKILLS

- Know methods used in the work with academic/scientific documentation and argumentation.
- Demonstrate familiarity with the design of an academic document.
- Be able to present the work both in an essay, at posters, and by an oral presentation.

COMPETENCES

- Should be able to search for, assess, choose, analyse, argue, summarise, put the work into perspective, and communicate information and knowledge that is relevant in the actual context.
- Should be able to structure and write an academic essay corresponding to the academic standards and traditions within management in the building industry.

TYPE OF INSTRUCTION

The student describes the topic of the academic paper noting possible course modules that the student wish to follow in the same semester. The course modules must not exceed 15 ECTS.

EXTENT AND EXPECTED WORKLOAD

Since it is a 30 ECTS project module, the workload is expected to be 900 hours for the student.

EXAM

EXAMS

Name of exam	Scientific Paper Writing
Type of exam	Oral exam based on a project Oral examination based on the scientific paper.
ECTS	30
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	As stated in the Joint Programme Regulations. http://www.engineering.aau.dk/uddannelse/studieadministration/

FACTS ABOUT THE MODULE

Danish title	Akademisk artikel
Module code	B-BL-K3-16
Module type	Project
Duration	1 semester
Semester	Autumn
ECTS	30
Language of instruction	English
Location of the lecture	Campus Aalborg
Responsible for the module	Lene Faber Ussing

ORGANISATION

Study Board	Study Board of Civil Engineering
Department	Department of Civil Engineering
Faculty	Faculty of Engineering and Science

ACADEMIC INTERNSHIP

2018/2019

PREREQUISITE/RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

The activity is based upon knowledge obtained at the 1st and 2nd semester.

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

- Planning and controlling of time, economic, quality, safety, and environment
- Problem-solving through knowledge gained at earlier semesters
- Management and organisational development
- Different forms of cooperation

SKILLS

The student should have practical knowledge about the chosen workplace i.e.:

- Public technical institution
- Technical utility company
- Consulting company
- Contracting company
- Construction company

The student must:

- Understand the economical, technical, social, environmental or work environmental situation of a work place
- Get insight into a company's social and administrative settings, including communication, cooperation, formal rules, and administrative routines.
- Account for the company's products and work methods.

COMPETENCES

- Should relate to engineering work competencies in a company
- Should have a practical approach to tasks within economical, technical, social, environmental or work environmental conditions
- Should be able to present work results in a technical report
- Should be able to make an oral presentation of work results
- Should have established contact with companies within the sector of the chosen specialisation
- Should be involved in a project for a longer period.

TYPE OF INSTRUCTION

The student should be considered as a regular employee and solve the engineering tasks that fits into the work of the group that the students is a part of. I.e. the student meets at the same time and for the same number of hours as is normal for the rest of the company.

Half way through the traineeship, the student meets with his/her supervisor in the company for an evaluation (oral or written). In that way possible insufficiencies can be corrected in the last part of the traineeship.

During/right after the traineeship the student must work on a semester report consisting of two parts:

1) A traineeship report describing the company/institution as well as the project that the student has worked on during the stay. Should also include a description of the engineering knowledge gained during the stay.

2) A special report about a topic in relation to the subject of the project and the objectives of the normal semester project.

EXTENT AND EXPECTED WORKLOAD

Since it is a 30 ECTS project module, the workload is expected to be 30 hours for the student.

EXAM

EXAMS

Name of exam	Academic Internship
Type of exam	Oral exam based on a project Oral examination based on the two project reports
ECTS	30
Assessment	7-point grading scale
Type of grading	Internal examination
Criteria of assessment	As stated in the Joint Programme Regulations. http://www.engineering.aau.dk/uddannelse/studieadministration/

FACTS ABOUT THE MODULE

Danish title	Projektorienteret forløb i en virksomhed
Module code	B-BL-K3-17
Module type	Project
Duration	1 semester
Semester	Autumn
ECTS	30
Language of instruction	English
Location of the lecture	Campus Aalborg
Responsible for the module	Lene Faber Ussing

ORGANISATION

Study Board	Study Board of Civil Engineering
Department	Department of Civil Engineering
Faculty	Faculty of Engineering and Science

MASTER'S THESIS

2018/2019

PREREQUISITE/RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

The activity is based upon knowledge obtained at the 1st, 2nd and 3rd semester.

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

- Must have knowledge and be able to understand the specialization subjects at the highest international level.
- Must be able to critically assess knowledge and identify emerging scientific issues within the specialization area.
- Must be able to understand the terms of specialization of the research area including research ethics.

SKILLS

- Must be able to independently explain the choice of scientific theoretical and / or experimental methods.
- Must via the project and at the end of it be able to provide an independent and critical assessment of the chosen theories and methods as well as of the analyzes, results and conclusions.
- Must be able to use a broad spectrum of engineering methods for research and development in the specialization area.
- Must be able to communicate relevant scientific and engineering professional aspects of the project work in a clear and systematic way to both peers and to the public.

COMPETENCES

- Must independently be able to problem formulate, implement, document, reflect on and communicate results of a project that deals with a complex work and development situation in the central topics of the Master's programme.
- Must be able to evaluate, select and translate academic knowledge, skills and scientific theories, methods and tools on a scientific basis to develop relevant new analytical approaches and justify its choice.
- Must be able to provide solid time and work plans for their own project, independently and critically assess progress, and to select and incorporate relevant literature, experiments or relevant data in order to maintain the scientific basis.
- Must be able to handle complex and unpredictable work situations and be able to develop new solutions.
- Must independently and with professional and scientific approach engage in dialogue with peers and professional stakeholders in relation to the Master's programme.
- Must be able to communicate the results obtained from the project work in a project report.
- Must be able to work around the project of the problem field and make a joint presentation of the project results.

TYPE OF INSTRUCTION

Project work with teacher feedback and more.

EXTENT AND EXPECTED WORKLOAD

Since it is a 30 ECTS project module, the workload is expected to be 900 hours for the student.

EXAM**EXAMS**

Name of exam	Master's Thesis
Type of exam	Oral exam based on a project Oral examination based on the presentation seminar and project report.
ECTS	30
Assessment	7-point grading scale
Type of grading	External examination
Criteria of assessment	As stated in the Joint Programme Regulations. http://www.engineering.aau.dk/uddannelse/studieadministration/

FACTS ABOUT THE MODULE

Danish title	Kandidatspeciale
Module code	B-BL-K4-18
Module type	Project
Duration	1 semester
Semester	Spring
ECTS	30
Language of instruction	English
Location of the lecture	Campus Aalborg
Responsible for the module	Lene Faber Ussing
Time allocation for external examiners	D

ORGANISATION

Study Board	Study Board of Civil Engineering
Department	Department of Civil Engineering
Faculty	Faculty of Engineering and Science

MANAGEMENT OF CONSTRUCTION INDUSTRY COMPANIES

2018/2019

PREREQUISITE/RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

Builds upon the knowledge acquired in the modules on the 1st semester or the like.

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

- Must have knowledge of management of construction, both technical, economic, social, and organisational.
- Must have knowledge of the theoretical and practical basis for the company's long-term development.
- Must have knowledge of coherent business systems and development plans at different management levels.

SKILLS

- Must be able to understand the structure of different management of construction for businesses.
- Must be able to analyse business management of constructions for the improvement of companies' operating systems.
- Must be able to understand the structure of support systems for the decision makers of the company.
- Must be able to identify business needs for strategic change and develop strategic plans for this transformation.
- Must be able to identify and assess a company's need for information for budgeting and dissemination of results.

COMPETENCES

- Must be able to be part of the management team in a construction project and in a company in the building and construction sector.
- Must be able to argue for specific strategic development initiatives and how they are implemented in practice.
- Must be able to communicate the results obtained from the project work in a project report
- Must be able to work around the project of the problem field and make a joint presentation of the project results.

TYPE OF INSTRUCTION

Lectures supplemented with workshops, presentation seminars and more.

EXTENT AND EXPECTED WORKLOAD

Since it is a 15 ECTS project module, the workload is expected to be 450 hours for the student.

EXAM

EXAMS

Name of exam	Management of Construction Industry Companies
Type of exam	Oral exam based on a project Oral examination based on presentation seminar and project report.
ECTS	15

Assessment	7-point grading scale
Type of grading	External examination
Criteria of assessment	As stated in the Joint Programme Regulations. http://www.engineering.aau.dk/uddannelse/studieadministration/

FACTS ABOUT THE MODULE

Danish title	Ledelsessystemer i byggeriets virksomheder
Module code	B-BL-K2-5
Module type	Project
Duration	1 semester
Semester	Spring
ECTS	15
Language of instruction	English
Location of the lecture	Campus Aalborg
Responsible for the module	Lene Faber Ussing
Time allocation for external examiners	B

ORGANISATION

Study Board	Study Board of Civil Engineering
Department	Department of Civil Engineering
Faculty	Faculty of Engineering and Science

ICT SUPPORTED COLLABORATION AND USER INVOLVEMENT IN THE BUILDING PROCESS

2018/2019

PREREQUISITE/RECOMMENDED PREREQUISITE FOR PARTICIPATION IN THE MODULE

Builds upon the knowledge acquired in the modules on the 1st semester or the like.

CONTENT, PROGRESS AND PEDAGOGY OF THE MODULE

LEARNING OBJECTIVES

KNOWLEDGE

- Methods for user involvement in creative and innovative design of buildings within and between enterprises
- Methods for user involvement in system development
- Evaluation paradigms in system development
- Augmented, Virtual and Mixed Reality environments

SKILLS

- Perform specification, development and testing of ICT-supported user environments for collaboration and communication
- Identify user needs and perform system evaluation
- Use the conceptual modelling methods and system development procedures as e.g. Contextual Design
- Facilitate user-driven innovation in the construction process
- Demonstrate knowledge of the structure and properties of augmented, virtual and mixed reality systems
- Apply theories and methods for specifying user needs and system requirements
- Apply theories and methods for system evaluating
- Explain how end-users can be involved in system development

COMPETENCES

- Participate actively in the planning and implementation of processes, which include specification, development and testing of ICT-supported user environments and workflows for cooperation and communication between different actors.

TYPE OF INSTRUCTION

Project work with supervision supplemented with workshops, presentation seminars and other forms of active learning.

EXTENT AND EXPECTED WORKLOAD

Since it is a 15 ECTS project module, the workload is expected to be 450 hours for the student.

EXAM

EXAMS

Name of exam	ICT Supported Collaboration and User Involvement in the Building Process
Type of exam	Oral exam based on a project Oral examination based on presentation seminar and project report.

ECTS	15
Assessment	7-point grading scale
Type of grading	External examination
Criteria of assessment	As stated in the Joint Programme Regulations. http://www.engineering.aau.dk/uddannelse/studieadministration/

FACTS ABOUT THE MODULE

Danish title	IKT-støttet samarbejde og brugerinddragelse i byggeprocessen
Module code	B-BL-K2-6
Module type	Project
Duration	1 semester
Semester	Spring
ECTS	15
Language of instruction	English
Location of the lecture	Campus Aalborg
Responsible for the module	Lene Faber Ussing
Time allocation for external examiners	B

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