

Curriculum

The Architectural Technology and Construction
Management programme

1 August 2016

INTRODUCTION

This Curriculum applies the professional bachelor programme in Architectural Technology and Construction Management. It describes the overall planning of the programme and thus constitutes a planning tool for the institution as well as study information for the students.

The objective of the curriculum is to

- translate the overall legislation into a common curriculum which describes the general conditions of the programmes
- ensure uniformity across the programmes
- enable students to move between different learning environments with full credit
- ensure a common touch in the curricula in terms of form and content.

The curriculum is divided into a common part and an institution-specific part. The common part describes the educational elements that are common to all Architectural Technology and Construction Management programmes offered in Denmark. The institution-specific part describes the rules that apply to the individual educational institution only.

Legislation

The curriculum is under the authority of:

- Ministerial Order on the law of Academy Profession Programmes and Professional Bachelor Programmes, LBK no. 1147 of 23/10/2014
- Ministerial Order on Academy Profession programmes and Professional Bachelor Programmes, BEK no. 1047 of 30/06/2016
- Ministerial Order on Professional Bachelor Programme in Architectural Technology and Construction Management, Academy Profession Programme in Construction Technology and Academy Profession Programme in Surveying and Mapping, BEK no. 715 of 07/07/2009
- Ministerial Order on the admission for Academy Profession Programmes and Professional Bachelor Programmes, BEK no. 85 of 26/01/2016
- Ministerial Order on change of The Admission Order for Academy Profession Programmes and Professional Bachelor Programmes, BEK no. 1048 of 30/06/2016
- Ministerial Order on Examinations on Professionally Oriented Higher Education Programmes, BEK no. 1046 of 30/06/2016
- Ministerial Order on grading scale and assessment at educations within the area of Ministry of Research and Education (The Grading Scala Order), BEK no. 114 of 03/02/2015
- Danish qualification requirements for the Higher Education Programmes

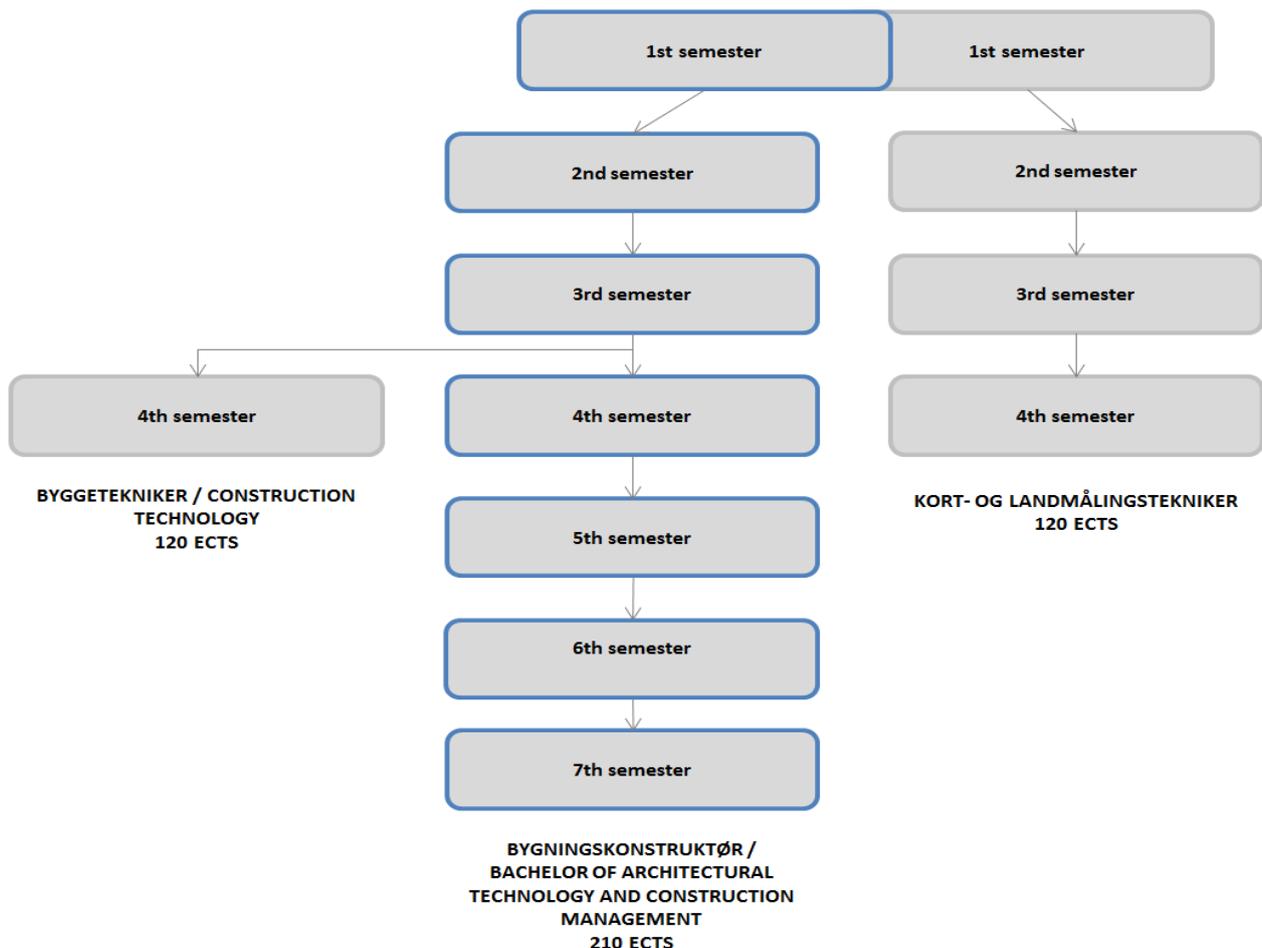
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1 PROGRAMME STRUCTURE

In accordance with the rules for the study programmes, cf. Ministerial Order no. 715 of 7 July 2009 on the professional bachelor programme in Architectural Technology and Construction Management, the Academy Profession Programme in Construction Technology and the Academy Profession Programme in Surveying and Mapping, parts of the discipline-specific contents of the three programmes are common, as illustrated in figure 1:

Figure 1: Programme structure



Source: Preparation in the network of approved providers of the programme based on the ministerial order

The Architectural Technology and Construction Management programme has a duration of 3½ years and is made up of seven semesters totalling 210 ECTS, which are composed of a number of compulsory and elective programme elements, including internship and bachelor project.

The compulsory programme elements are common to all programmes offered in Denmark. However, the individual institution has defined the elective programme elements. A further description of these appears from the common and institution-specific part, respectively.

The Architectural Technology and Construction Management programme is also offered in Danish. The Danish title is Bygningskonstruktøruddannelsen.

The distribution of ECTS points on compulsory and elective programme elements, including internship and bachelor project, is illustrated in the following figure.

Figure 1: The compulsory and elective programme elements of the Architectural Technology and Construction Management programme

1st semester	Residential buildings 30 ECTS	
2nd semester	Buildings up to 2½ storeys 30 ECTS	
3rd semester	Industrial buildings and prefabrication 25 ECTS	Elective programme element 5 ECTS
4th/5th semester	Multi-storey buildings i > 3 storeys 20 ECTS	Elective programme element 10 ECTS
4th/5th semester	Renovation 20 ECTS	Elective programme element 10 ECTS
6th semester	Internship 30 ECTS	
7th semester	Bachelor project 20 ECTS	Elective programme element 10 ECTS

Source: Preparation in the network of approved providers of the programme based on the ministerial order

As indicated in figure 2 the compulsory programme elements are always placed in semester 1-3 as well as 6-7, whereas the individual institution can determine the compulsory programme element to be placed in the 4th and 5th semester, respectively. This is specified in the institution-specific part.

2 CURRICULUM – COMMON PART

The common part includes a description of the programme elements that are common to all Architectural Technology and Construction Management programmes offered.

These elements consist of five discipline-specific core areas and seven compulsory programme elements, including internship and bachelor project.

The compulsory programme elements in the first five semesters are limited courses that draw on learning objectives and include ECTS points from the core areas, cf. table 1.

Apart from that, learning objectives and ECTS points have been laid down for internship (30 ECTS), bachelor project (20 ECTS) and elective programme elements (35 ECTS).

Table 1: ECTS points for compulsory programme elements divided into core areas

	General	Business	Production	Design	Registration	Total
Residential buildings	10	0	5	10	5	30
Buildings up to 2½ storeys	10	5	10	5	0	30
Industrial buildings and prefabrication	5	5	10	5	0	25
Multi-storey buildings >3 storeys	5	0	5	10	0	20
Renovation	0	5	5	10	0	20
TOTAL	30	15	35	40	5	125

Source: Preparation in the network of approved providers of the programme based on the ministerial order

2.1 Core areas in the study programme

The programme consists of five core areas – General, Business, Production, Design and Registration – which constitute the overall subject areas with which the students are to work in order to acquire the knowledge, skills and competences required to complete the study programme.

2.1.1 General

2.1.1.1 Contents

The core areas comprise communication, theory of science, working methodology, organisation, cooperation, information technology, innovation, numeracy, applied mathematics and physics as well as foreign languages.

I.e. general skills that can be used in connection with the other core areas.

2.1.1.2 Learning objectives

Knowledge

The graduate should have knowledge of:

- principles of oral and written communication in general and within the profession
- the use of general information technology of significance to the profession

- theory of science relevant to the profession together with the ability to reflect on its significance for both personal and professional development
- principles and methods for personal planning and management of processes
- principles and methods for use in cooperation, organisation and learning
- methods of innovation within the profession and the ability to reflect on the use of the methods in relation to concrete tasks
- general applied mathematical and physical construction principles of relevance to the profession
- their work methods, results and improvement opportunities as well as those of others
- theoretical and methodical issues within the profession area

Skills

The graduate should be able to:

- convey professional issues by means of relevant media, independently and in collaboration with others
- handle communicative tasks related to management, project design, planning and execution of building and construction projects
- organise and manage their own work and that of the project group as well as assess results achieved, independently and in collaboration with others
- seek and substantiate the use of technical joint property applied and other material relevant to the profession
- assess practice-related and theoretical issues as well as substantiate the choice of relevant solution models
- use general linguistic and scientific knowledge to solve the assignments of the profession
- use innovative approaches and solutions to solve given technical tasks/issues
- use general information technology of significance to the profession
- apply general numeracy

Competences

The graduate should have the competences to:

- identify their own knowledge and learning needs based on the knowledge, skills and competences acquired within the core area
- acquire new knowledge within the core area and translate it to practice in respect of the profession
- use relevant argumentation and relate critically, both orally and in writing, to interdisciplinary issues
- independently take part in discipline-specific and interdisciplinary collaboration and take on responsibility within the settings of professional ethics
- handle complex and development-oriented situations in relation to work or study
- take part in the solution of theoretical and methodical issues within the profession area

2.1.1.3 ECTS points

The core area comprises 30 ECTS points out of the 210 total ECTS points for the programme.

2.1.2 Business

2.1.2.1 Contents

The core area comprises business operations, administration and law.

2.1.2.2 *Learning objectives*

Knowledge

The graduate should have knowledge of:

- applied principles, methods and rules within entrepreneurship
- basic principles, theories, methods and tools related to managing business economics and personnel management
- the structure of rules of law and legal method
- basic rules in regard to the law of property within contractual law, law of torts and practice
- contractual relations
- the opportunities and rules of the profession for setting up their own company
- corporate and organisational forms in connection with the establishment and operation of a business as well as the strategies and business plans that form the basis of the selection
- the social, cultural and ethical issues that have an impact on the establishment, operation and administration of a business
- the basic elements of building economy

Skills

The graduate should be able to:

- select and use methods and tools for organising, leading, managing and operating a business
- apply legislation in relation to business operations and administration
- apply accounting principles for operating a business and use the industry's methods and tools for budgeting, bookkeeping and tendering
- apply industry-relevant forms and standard contracts in relation to company management, planning and follow-up
- scrutinise the legal basis of contract formation as well as prepare a risk assessment in the company;
- manage risks and prepare risk assessment in projects
- handle the management and control of small companies, independently and in collaboration with others

Competences

The graduate should have the competences to:

- identify their own knowledge and learning needs based on the knowledge, skills and competences acquired within the core area
- acquire new knowledge within the core area and translate it to practice in respect of the profession
- set up a business of their own within the profession's work areas, independently and in collaboration with others
- handle the management and control of small companies, independently and in collaboration with others
- handle the tender process, independently and in collaboration with others
- manage projects professionally, in terms of time, financially and legally

2.1.2.3 *ECTS points*

The core area comprises 15 ECTS points out of the 210 total ECTS points for the programme.

2.1.3 Production

2.1.3.1 *Contents*

The core area includes building and construction production and project management.

2.1.3.2 *Learning objectives*

Knowledge

The graduate should have knowledge of:

- applied principles, theories and methods within innovation, planning, management and execution of production processes within the industry and be able to reflect on them
- general theoretical production concepts and methods used in practice in the industry as well as be able to reflect on them
- applied principles, theories and methods for project management of building and construction production in factories or on the construction site as well as be able to reflect on them
- relevant communication and methods for communicating problems in production processes
- applied principles, theories, methods and tools for financial management of building and construction

Skills

The graduate should be able to:

- analyse, evaluate and use up-to-date and relevant methods and tools for the management and planning of production
- manage projects independently and in collaboration with other professionals, including convey technical production issues, to other interested parties
- combine and include relevant experience, knowledge and research for addressing production processes
- analyse and understand issues in production processes and, in an interdisciplinary context, find solutions via co-operation with others
- assess and understand human, environmental, financial and technological aspects of production
- assess and understand social, cultural and ethical connections in production and the collaboration on its execution
- convey practice-related issues and solutions
- include digital systems and methods to optimise information flows in a building and construction project
- apply relevant building law
- apply and further develop an information model at a suitable information level and with suitable property sets with a view to production, and classify structures, construction members and components via a coherent and recognised classification system
- manage risks in projects
- analyse, assess and apply tools for use in financial management of parts of constructions
- prepare tender documents
- analyse and assess project and production material in relation to quality assurance
- choose production methods
- handle tender, agreement and organisation forms
- use the basic tools and production methods of business and industry in practice
- choose production methods and materials in relation to requirements and specifications in tenders

Competences

The graduate should have the competences to:

- identify their own knowledge and learning needs based on the knowledge, skills and competences acquired within the core area
- acquire new knowledge within the core area and translate it to practice in respect of the profession
- plan and manage the production of complex building and construction tasks, independently and in cooperation with other professions
- handle communication between users, clients, authorities, consultants and contractors about the production of complex construction tasks or building components
- analyse and select methods and systems to optimise information flows in a building and construction project
- handle information model data and exchange these between different systems for use in the production
- handle tender, agreement and organisation forms
- handle financial management of building and production processes

2.1.3.3 *ECTS points*

The core area includes building and construction production and project management.

2.1.4 Design

2.1.4.1 *Contents*

The core area includes building and construction production and project management.

2.1.4.2 *Learning objectives*

Knowledge

The graduate should have knowledge of:

- principles, theories, methods and tools within design and design management and be able to reflect on the choice of method for a given task
- the phases and/or information levels in the project design and be able to reflect on the related information needs
- project design and innovation methodologies, interdisciplinary collaboration forms with other professions on project design as well as work with clients, authorities and other interested parties concerning the planning and design of building and construction projects
- architecture, known and new building techniques, styles, building methods, sustainability, cultural heritage and materials management
- static analysis, load bearing calculations, calculations of estimates for project design and execution of construction projects
- building physics, moisture and energy conditions, calculations of estimates and the incorporation of building services in connection with design and execution of construction tasks
- quality assurance, work environment and document handling in connection with project management from planning to the running of building and construction projects
- construction of digital building information models consisting of relevant information, in respect of the project design process

Skills

The graduate should be able to:

- plan new building and renovation in collaboration with other professions by including building legislation, standards, sustainability, technical joint property and new knowledge in the building and construction sector
- master known and applied project design, project management and communication tools used in the profession
- produce static analyses and apply estimate calculations
- assess building physics properties and indoor climate as well as prepare energy calculations for buildings and be able to use them in practice
- set out utility supply systems and incorporation possibilities for building services
- develop plans for quality assurance, health and safety for building and construction projects
- convey practice-related issues and solutions
- assess practice-related and theoretical issues as well as substantiate choice of relevant solution models
- construct a digital building information model consisting of structures, construction members and components at a relevant information level and with property sets in relation to the planning process
- prepare appropriate operation & maintenance plans, renovation and/or conversion proposals and other actions by means of surveying and condition checks

Competences

The graduate should have the competences to:

- identify their own knowledge and learning needs based on the knowledge, skills and competences acquired within the core area
- acquire new knowledge within the core area and translate it to practice in respect of the profession
- be in charge of project design and planning of complex building and construction projects, independently and in cooperation with other professions
- independently handle project management, quality management and document management in a building and construction project
- identify and formulate central issues and requirements for building and construction
- handle technical construction work in accordance with the architecture of building, including meet requirements for sustainability in complex building and construction projects
- evaluate and select technical, innovative and sustainable design solutions and materials for use in structures in complex building and construction tasks
- handle digital building information models as well as translate and extract data between different information systems and detail models
- take part in interdisciplinary collaboration on surveying and registration in connection with building and construction tasks
- handle technical construction work in accordance with the architecture of building

2.1.4.3 *ECTS points*

The core area comprises 40 ECTS points out of the 210 total ECTS points for the programme.

2.1.5 Registration

2.1.5.1 *Contents*

The core area includes surveying, setting-out and condition check.

2.1.5.2 *Learning objectives*

Knowledge

The graduate should have knowledge of:

- principle, theories, methods and tools used within surveying, setting-out related to the building and construction area
- instruments used for surveying and setting-out buildings and the accuracy obtained through surveying

Skills

The graduate should be able to:

- assess setting-out tasks, understand and use site plans with contour lines and other map features used in the building and construction industry
- record and assess the condition of building components, constructions and buildings
- assess practice-related and theoretical issues as well as substantiate choice of relevant solution models
- communicate practical and professional problems and issues as well as solutions for partners and users

Competences

The graduate should have the competences to:

- identify their own knowledge and learning needs based on the knowledge, skills and competences acquired within the core area
- acquire new knowledge within the core area and translate it to practice in respect of the profession
- independently take part in interdisciplinary collaboration on setting out and surveying in connection with building and construction projects and take on responsibility within the settings of professional ethics

2.1.5.3 *ECTS points*

The core area comprises 5 ECTS points out of the 210 total ECTS points for the programme.

2.2 Compulsory programme elements

2.2.1 Residential buildings, 1st semester

2.2.1.1 Contents

The compulsory programme element consists of an interdisciplinary project where the students work with a concrete small residential building.

The compulsory programme element has the following core areas:

- General (10 ECTS)
- Production (5 ECTS)
- Design (10 ECTS)
- Registration (5 ECTS)

2.2.1.2 Learning objectives

Knowledge

By the end of the compulsory programme element, the student should have knowledge of:

- the correlation between the various professional issues in the semester theme
- relevant communication theories and methods to convey discipline-specific issues, including digital media within the theme of the compulsory programme element
- tools and standards in connection with the theme of the compulsory programme element
- the basic technical disciplines and related relevant documentation of the profession within the theme of the compulsory programme element
- general working methods in relation to theme of the compulsory programme element
- working methodology through methods and practice for use in planning, collaboration and learning
- methods and practice for use in planning, collaboration and learning
- general mathematical and physical construction principles of relevance to the profession
- basic static principles
- data collection and documentation in connection with project design tasks
- industry partners, professional areas and insight into the construction process in relation to the theme of the compulsory programme element
- applied principles, theories, methods and tools for project management of building and construction production in factories or on the construction site in relation to the theme of the compulsory programme element

Skills

By the end of the compulsory programme element, the student should be able to:

- use methods and tools collect and analyse information within the theme of the compulsory programme element
- convey practice-related technical issues related to the theme of the compulsory programme element to relevant partners and users
- relevant communication and methods to convey problems in production processes
- apply professional techniques in relation to the theme of the compulsory programme element and use methods for planning the building process
- structure their own and the work group's work at starter level
- assess setting-out tasks as well as understand and use site plans with contour lines and other map features used in the building and construction industry

Competences

By the end of the compulsory programme element, the student should have the competences to:

- identify their own knowledge and learning needs based on the knowledge, skills and competences acquired in the course of the completed compulsory programme elements
- handle relevant construction and documentation material in relation to the theme of the compulsory programme element
- understand the correlation between the various professional issues in the theme of the compulsory programme elements
- take part in interdisciplinary collaboration on setting out in connection with building and construction tasks

2.2.1.3 *ECTS points*

This compulsory programme element comprises 30 ECTS points out of the 210 total ECTS points for the programme.

2.2.1.4 *Exams*

The compulsory programme elements Residential buildings and Buildings up to 2½ storeys are concluded with one overall exam (see further under exams).

2.2.2 Building construction up to 2½ storeys, 2nd semester

2.2.2.1 *Contents*

The compulsory programme element consists of an interdisciplinary project where the students work with a concrete building up to 2½ storeys.

The compulsory programme element has the following core areas:

- General (10 ECTS)
- Business (5 ECTS)
- Production (10 ECTS)
- Design (5 ECTS)

2.2.2.2 *Learning objectives*

Knowledge

By the end of the compulsory programme element, the student should have knowledge of:

- the correlation between the various professional issues in the semester theme
- relevant communication theories and methods to convey discipline-specific issues, including digital media within the theme of the compulsory programme element
- tools and standards in connection with the theme of the compulsory programme element
- the basic technical disciplines and related relevant documentation of the profession within the theme of the compulsory programme element
- basic working methods in relation to theme of the compulsory programme element
- relevant social, environmental, financial and technological aspects of the production process
- working methodology through methods and practice for use in planning, collaboration and learning
- applied principles, methods and rules within entrepreneurship
- basic contractual relations concerning building
- general theoretical production concepts and methods applied in practice

- construction of digital building information models consisting of relevant information in respect of the project design process
- applied principles, theories, methods and tools for financial management of building
- specific production tools applied in practice in the industry

Skills

By the end of the compulsory programme element, the student should be able to:

- use methods and tools to collect and analyse information within the theme of the compulsory programme element
- convey practice-related technical issues related to the theme of the compulsory programme element to relevant partners and users
- assess theoretical and practical problems and issues concerning project design in relation to the theme of the compulsory programme element and substantiate the chosen actions and solutions
- apply professional techniques in relation to the theme of the compulsory programme element and use methods for planning its execution
- analyse, assess and apply tools for use in financial management of parts of constructions
- analyse and assess project and production material in relation to quality assurance

Competences

By the end of the compulsory programme element, the student should have the competences to:

- identify their own knowledge and learning needs based on the knowledge, skills and competences acquired in the course of the completed compulsory programme element
- independently take part in discipline-specific and interdisciplinary collaboration and take on responsibility within the settings of professional ethics
- apply the acquired knowledge and the skills included in the theme of the compulsory programme element to carry out substantiated analysis of discipline-specific relevant issues and their solutions
- handle project design of a building in relation to the theme of the compulsory programme element and account for the principles of the execution
- handle tender, agreement and organisation forms

2.2.2.3 ECTS points

This compulsory programme element comprises 30 ECTS points out of the 210 total ECTS points for the programme.

2.2.2.4 Exams

The compulsory programme elements Residential buildings and Buildings up to 2½ storeys are concluded with one overall exam (see further under exams).

2.2.3 Industrial buildings and prefabrication, 3rd semester

2.2.3.1 Contents

The compulsory programme element consists of an interdisciplinary project where the students work with project design of industrialised components used in a concrete building.

The compulsory programme element has the following core areas:

- General (5 ECTS)
- Business (5 ECTS)

- Production (10 ECTS)
- Design (5 ECTS)

2.2.3.2 *Learning objectives*

Knowledge

By the end of the compulsory programme element, the student should have knowledge of:

- the correlation between the various professional issues in relation to theme of the compulsory programme element
- relevant communication theories and methods to convey discipline-specific issues, including digital media within the theme of the compulsory programme element
- tools and standards in connection with the theme of the compulsory programme element
- industrial production and execution methods in relation to theme of the compulsory programme element
- industrial constructions, planning and control tools, technical installations, static principles and documentation in relation to the theme of the compulsory programme element
- mathematical and physical solutions in relation to theme of the compulsory programme element
- basic principles, theories, methods and tools related to managing business economics and personnel management
- the structure of rules of law and legal method
- basic rules in regard to the law of property within contractual law, law of torts and practice
- the opportunities and rules of the profession for setting up their own company
- corporate and organisational forms in connection with the establishment and operation of a business as well as the strategies and business plans that form the basis of their selection
- the social, cultural and ethical issues that have an impact on the establishment, operation and administration of a business
- applied principles, theories, methods and tools for project management of construction production in factories or on the construction site as well as be able to reflect on them
- digital systems and methods to optimise information flows in a building and construction project

Skills

By the end of the compulsory programme element, the student should be able to:

- use methods and tools to collect and analyse information within the theme of the compulsory programme element
- convey practice-related technical issues related to the theme of the compulsory programme element to relevant partners and users
- select and use relevant methods and tools for organising, leading, managing, administering and operating a business
- apply relevant legislation in relation to business operations and administration
- apply accounting principles for operating a business and use the industry's methods and tools for budgeting, bookkeeping and tendering
- apply the industry's methods, forms and standard contracts in relation to company management, planning and follow-up
- scrutinise the legal basis of contract formation as well as prepare a risk assessment in the company
- analyse, evaluate and use up-to-date and relevant methods and tools for production management and planning
- include digital systems and methods to optimise information flows in a building and construction project
- apply relevant building law

- apply and further develop an information model at a suitable information level and with suitable property sets with a view to production
- classify structures, construction members and components via a coherent and recognised classification system

Competences

By the end of the compulsory programme element, the student should have the competences to:

- identify their own knowledge and learning needs based on the knowledge, skills and competences acquired in the course of the completed compulsory programme elements
- independently take part in discipline-specific and interdisciplinary collaboration and take on responsibility within the settings of professional ethics
- apply the acquired knowledge and the skills included in the theme of the compulsory programme element to carry out substantiated analysis of discipline-specific relevant issues and their solutions
- analyse and select methods and systems to optimise information flows in a building and construction project

2.2.3.3 *ECTS points*

This compulsory programme element comprises 25 ECTS points out of the 210 total ECTS points for the programme.

2.2.3.4 *Exams*

The compulsory programme element is concluded with one exam (see further under exams).

2.2.4 Multi-storey buildings >3 storeys, 4th semester

2.2.4.1 *Contents*

The compulsory programme element consists of an interdisciplinary project where the students work with a concrete multi-storey building >3 storeys.

The compulsory programme element has the following core areas:

- General (5 ECTS)
- Production (5 ECTS)
- Design (10 ECTS)

2.2.4.2 *Learning objectives*

Knowledge

By the end of the compulsory programme element, the student should have knowledge of:

- the correlation between the various professional issues in relation to the theme of the compulsory programme element
- relevant communication theories and methods to convey discipline-specific issues, including digital media within the theme of the compulsory programme element
- tools, standards and innovative processes in connection with the theme of the compulsory programme element
- complex production and execution methods in relation to theme of the compulsory programme element
- complex constructions, planning and control tools, technical installations, static principles and documentation in relation to the theme of the compulsory programme element

- scientific principles and documentation
- innovation theory and methods

Skills

By the end of the compulsory programme element, the student should be able to:

- use methods and tools to collect and analyse information within the theme of the compulsory programme element
- convey the chosen methods and technical solutions to relevant partners
- apply project design methods in relation to the theme of the compulsory programme element and use methods for planning and managing the execution of the work
- assess different methods and procedures and be able to make a substantiated choice
- translate a chosen management concept into practical planning in relation to project design and execution
- manage projects independently and in collaboration with other professionals, including convey technical issues concerning production, to other interested parties
- combine and include relevant experience, knowledge and research to address production processes
- analyse and understand issues in production processes and, in an interdisciplinary context, find solutions via co-operation with others
- assess and understand relevant social, environmental, financial and technological aspects of the production process

Competences

By the end of the compulsory programme element, the student should have the competences to:

- identify their own knowledge and learning needs based on the knowledge, skills and competences acquired in the course of the completed compulsory programme elements
- apply the acquired knowledge and the skills included in the theme of the compulsory programme element to carry out substantiated analysis of discipline-specific relevant issues and their solutions;
- take part in discipline-specific and interdisciplinary collaboration
- handle the information model data and exchange these between different systems for use in the production
- convert analysis and project material to execution of the theme of the compulsory programme element
- manage the project design and execution process for a multi-storey building, taking relevant social, environmental, financial and technological aspects into consideration
- prepare and use digital building information models and transfer and extract data between different information systems and detail models
- create innovative solutions within construction with a view to optimising production

2.2.4.3 ECTS points

This compulsory programme element comprises 20 ECTS points out of the 210 total ECTS points for the programme.

2.2.4.4 Exams

The compulsory programme element is concluded with one exam (see further under exams).

2.2.5 Renovation, 5th semester

2.2.5.1 *Contents*

The compulsory programme element consists of an interdisciplinary project where the students work with planning and project design of a concrete renovation.

The compulsory programme element has the following core areas:

- Business (5 ECTS)
- Production (5 ECTS)
- Design (10 ECTS)

2.2.5.2 *Learning objectives*

Knowledge

By the end of the compulsory programme element, the student should have knowledge of:

- the correlation between the various professional issues related to the theme of the compulsory programme element
- relevant communication theories and methods to convey discipline-specific issues, including digital media within the theme of the compulsory programme element
- tools and standards in relation to the theme of the compulsory programme element
- constructions, sustainability, planning and control tools, technical installations, static principles and documentation in relation to the theme of the compulsory programme element
- project design and execution methods in relation to theme of the compulsory programme element
- different energy-optimising renovation and conversion concepts

Skills

By the end of the compulsory programme element, the student should be able to:

- use methods and tools to collect and analyse information in relation to the theme of the compulsory programme element
- convey practice-related technical issues related to the theme of the compulsory programme element to relevant partners and users
- assess and understand social, cultural and ethical connections in production and the collaboration on its execution
- assess theoretical and practice-related issues concerning the theme of the compulsory programme element and make substantiated choices
- apply project-design and sustainable methods in relation to the theme of the compulsory programme element and use methods for planning the execution of the work

Competences

By the end of the compulsory programme element, the student should have the competences to:

- identify their own knowledge and learning needs based on the knowledge, skills and competences acquired in the course of the completed compulsory programme elements
- acquire new knowledge and translate it to practice in respect of the profession
- set up a business of their own within the profession's areas, independently and in collaboration with others
- handle the management and control of small companies, independently and in collaboration with others
- handle the tender process, independently and in collaboration with others
- manage projects professionally, in terms of time, financially and legally

- plan, quality assure and manage the production of complex building and construction tasks, independently and in cooperation with other professions
- handle communication between users, clients, authorities, consultants and contractors about the production of complex construction tasks or building components
- involve relevant social, environmental, financial and technological aspects in the production process;
- apply the acquired knowledge and the skills included in the theme of the compulsory programme element to carry out technical construction work based on a substantiated analysis of discipline-specific relevant issues and their solutions
- manage the project-design and production process for a renovation and conversion project, taking relevant social, environmental, financial and technological aspects into consideration
- take part in discipline-specific and interdisciplinary collaboration
- document the planning of their own work based on self-management principles

2.2.5.3 *ECTS points*

This compulsory programme element comprises 20 ECTS points out of the 210 total ECTS points for the programme.

2.2.5.4 *Exams*

The compulsory programme element is concluded with one exam (see further under exams).

2.3 Internship

2.3.1.1 *Contents*

The Architectural Technology and Construction Management programme includes one internship period. The internship consists of discipline-specific work and its aim is to prepare the students for work as a bachelor of architectural technology and construction management.

The internship is to be completed in a private or public company in Denmark or abroad. The internship company must offer internship assignments with a work content that is relevant to the profession, as well as guidance.

2.3.1.2 *Learning objectives*

Knowledge

By the end of the internship, the student should have knowledge of:

- the practical work involved in the profession in the specific company
- the organisational, financial, administrative, societal and work-related aspects of the specific internship company

Skills

By the end of the internship, the student should be able to:

- work with relevant professional issues within the professional area in the specific company
- work independently or in collaboration with others to resolve theoretical and practical tasks in the company
- convey practice-related issues and solutions

Competences

By the end of the internship, the student should have the competences to:

- translate the programme's core areas into theoretical and practical tasks in the specific company
- identify their own learning needs and develop their own knowledge, skills and competences in relation to practice
- handle complex and development-oriented situations in work contexts
- independently take part in discipline-specific and interdisciplinary collaboration and take on responsibility within the settings of professional ethics

2.3.1.3 *ECTS points*

The internship period comprises 30 ECTS points out of the 210 total ECTS points for the programme.

2.3.1.4 *Exams*

The internship period element is concluded with one exam (see further under exams).

2.4 The Bachelor Project

2.4.1.1 Contents

The programme is concluded with a bachelor project. The project cannot be concluded until all other exams of the programme have been passed.

In order for the students to complete the bachelor project in a satisfactory way, the project must meet the following requirements:

- The project must reflect the end objective of the programme.
- The project must be based on a practice-related problem or issue that is central to the programme and the profession. The students must formulate the problem statement themselves, possibly in collaboration with a private or public enterprise/organisation, and have it approved by the institution.

The process:

- The project may be prepared individually or in groups of up to three students.
- If the bachelor project is prepared in a group, the project must clearly indicate who is responsible for the individual parts, so that it is possible to assess the individual student's performance at the exam.

Further requirements appear from the institution-specific part of this Curriculum.

2.4.1.2 Learning objectives (programme end objectives)

Knowledge

The graduate should have knowledge of:

- applied principles, theories and methods in management, project design, planning and execution of complex building and construction tasks and, through reflection, be able to apply those theories and methods to different situations
- professionally relevant theoretical concepts and methods
- relevant communication theories and methods to convey discipline-specific issues, including digital media within constructional as well as general areas
- principles and models of the trade for setting up, running and organising businesses
- societal and technological matters that influence the construction process, including issues in respect of energy, working environment and sustainability in a local and global perspective
- managerial, social, linguistic, cultural and ethical aspects of and collaboration on construction works

Skills

The graduate should be able to:

- assess and use relevant methods for management, project design, planning and execution of complex construction tasks, including digital programs and systems;
- select relevant method and substantiate the choice within the profession area
- evaluate, combine and include relevant research knowledge to solve complex technical construction issues
- disseminate knowledge of technical research and development to relevant parties via relevant media
- assess business-related and organisational issues
- assess and understand human, environmental, financial and technological matters in respect of constructions, including aspects of energy, working environment and sustainability

Competences

The graduate should have the competences to:

- manage, design, plan and execute complex construction tasks independently and in collaboration with other professionals
- manage, design and participate in innovative and development-oriented company projects
- identify their own knowledge and learning needs so as to acquire new knowledge and translate this into professionally relevant practice
- handle communications between users, clients, consultants, designers and contractors about technical planning, procurement and implementation of complex building and/or construction tasks
- handle administrative tasks and project management within the building and construction area
- handle societal and technological aspects in the design of and working on building projects
- handle social, cultural and ethical aspects in the design of and working on building projects
- take part in management and collaboration contexts with others who have another educational, linguistic and cultural background

2.4.1.3 *ECTS points*

The bachelor project comprises 20 ECTS points out of the 210 total ECTS points for the programme.

2.4.1.4 *Exams*

The bachelor project is concluded with one exam (see further under the institutional section).

2.5 Credit transfer for compulsory programme elements and internship

The purpose of credit transfer is that it gives a student a chance to build on already acquired qualifications and a chance to avoid the waste of resources related to repeated education, both to the student and to society in general. Students are entitled to credit transfer if the conditions are met.

Credit transfer is the result of the institution's assessment of whether previous education programmes correspond to theoretical parts of the Architectural Technology and Construction Management programme and of whether qualifications achieved through employment correspond to the outcomes laid down for the internship that is part of the study programme. Credit transfer is granted as an actual reduction of the time spent on completing the education or as an exemption from parts of the programme – depending on how the programme is specifically planned. Credit transfer for parts of a study programme requires a high degree of identity between previously completed education and internship courses and the Architectural Technology and Construction Management programme.

The credit transfer assessment is made on the basis of documented and completed education and employment. Documentation of completed education will normally be formal exam certificates as well as course certificates and diplomas. In relation to employment the documentation will normally be employment contracts, testimonials, etc.

Credit transfer can only be given based on formal documentation.

Complaints about decisions to reject an application for credit transfer can be brought before the Qualifications Board.