

Bachelor's Degree Programme of Architectural
Technology and Construction Management

August 2016

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1. Curriculum framework

This is a translated version of the Danish curriculum. In case of discrepancies between the Danish version and the English version, the rules in the Danish version apply.

The curriculum applies to the international line of the Bachelor's Degree Programme of Architectural Technology and Construction Management (BA in Architectural Technology and Construction Management programme). It applies to students who commence the first, second or third semester on the programme after 1 August 2016, students who commence the fourth semester on the programme after 1 January 2017 and students who commence the fifth, sixth or seventh semester after 1 August 2017.

The curriculum has been prepared by the educational network for the Architectural Technology and Construction Management, Construction Technology, and Surveying and Mapping programmes, which is composed of the Copenhagen School of Design and Technology, VIA University College, EASJ – Zealand Institute of Business and Technology, University College of Northern Denmark and Lillebaelt Academy.

The objective of the BA in Architectural Technology and Construction Management programme is to provide graduates with the qualifications needed to independently plan, manage and carry out technical and administrative work in connection with the design and execution of building and construction projects.

The programme is a full-time programme corresponding to 210 ECTS points. 60 ECTS points are equivalent to one year of full-time study.

Graduates are entitled to use the title Bachelor of Architectural Technology and Construction Management. The Danish title is *bygningskonstruktør, professionsbachelor i bygningskonstruktion*. The Danish programme title is *bygningskonstruktøruddannelsen*.

The Danish Qualifications Framework for Lifelong Learning is an overall, systematic overview of the publicly approved degrees and certificates in the Danish educational system. The degrees and certificates are divided into eight levels based on the knowledge, skills and competencies acquired on the programme. The BA in Architectural Technology and Construction Management programme is a level-6 programme in the qualifications framework.

The programme is subject to the following:

Ministerial Order no. 715 of 7 July 2009 on the Bachelor's Degree Programme of Architectural Technology and Construction Management, the Academy Profession Degree Programme in Construction Technology and the Academy Profession Degree Programme in Surveying and Mapping.

In addition, the latest versions of the following acts and ministerial orders apply:

Danish (Consolidated) Act on Academies of Professional Higher Education

Danish (Consolidated) Act on Academy Profession Programmes and Professional Bachelor Programmes

Ministerial Order on Academy Profession Programmes and Professional Bachelor Programmes

Ministerial Order on Examinations on Professionally Oriented Higher Education Programmes (the Examination Order)

Ministerial Order on Admission to and Enrolment on Academy Profession Programmes and Professional Bachelor Programmes (the Admissions Order)

Ministerial Order on the Grading Scale and Other Forms of Assessment of Study Programmes Offered under the Ministry of Higher Education and Science (the Grading Scale order)

Ministerial Order on special educational support on higher education programmes.

1.1. Effective date

The curriculum takes effect on 1 August 2016.

1.2. Transitional arrangements

Not relevant

2. Admission

Admission to the programme is subject to the rules set out in the Admissions Order.

2.1. Academic criteria for the selection of applicants on top-up programmes

Not relevant

3. Programme elements and modules

3.1. Semesters in which programme elements, internships and exams take place

The BA in Architectural Technology and Construction Management programme, the Academy Profession Degree Programme in Construction Technology and the Academy Profession Degree Programme in Surveying and Mapping include modules that are common to all three programmes.

The BA in 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 an internship and a bachelor project. The programme covers five academic core areas and seven compulsory programme elements.

The compulsory programme elements in the first five semesters are clearly defined courses containing learning objectives and ECTS points from the programme's core areas, see the table below.

Number of ECTS points for compulsory programme elements distributed on core areas						
	General	Business	Production	Design	Survey	Total
Residential building	10	0	5	10	5	30
Building up to 2½ storeys	10	5	10	5	0	30
Industrial building and prefabrication	5	5	10	5	0	25
Multi-storey building	5	0	5	10	0	20
Renovation	0	5	5	10	0	20
TOTAL	30	15	35	40	5	125

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

Compulsory and elective programme elements on the BA in Architectural Technology and Construction Management programme

First semester	Residential building 30 ECTS	
Second semester	Building up to 2½ storeys 30 ECTS	
Third semester	Industrial building and prefabrication 25 ECTS	Elective programme element 5 ECTS
Fourth/fifth semester	Multi-storey building 20 ECTS	Elective programme element 10 ECTS
Fourth/fifth semester	Renovation 20 ECTS	Elective programme element 10 ECTS
Sixth semester	Internship 30 ECTS	
Seventh semester	Bachelor project 20 ECTS	Elective programme element 10 ECTS

3.2. Core areas

3.3. Core areas on the programme

The programme consists of five core areas – General, Business, Production, Design and Survey – which constitute the overall subject areas which the students must work with to acquire the knowledge, skills and competencies required to complete the programme.

Core area General

The core area includes communication, theory of science, working methodology, organisation, cooperation, information technology, innovation, numeracy, applied mathematics and physics as well as foreign languages. In other words, basic skills to be applied in connection with the other core areas.

Learning objectives:

Knowledge

The graduate has acquired knowledge of:

- principles for oral and written communication in English, in general and within the profession
- the use of general information technology essential to the profession
- theory of science relevant to the profession, including its importance to personal and professional development
- principles and methods for personal planning and process management
- principles and methods for cooperation, organisation and learning
- methods for innovation within the profession and their use in relation to the specific task
- general, applied principles for mathematics and construction physics of relevance to the profession
- own working methods, results and improvement opportunities as well as those of others
- theoretical and methodical issues within the profession.

Skills:

The graduate has acquired the skills needed to:

- communicate professional issues using relevant media, independently and in collaboration with others
- handle communication tasks in connection with the management, design, planning and execution of building and construction projects in English
- organise and manage own work and the work of the project group and assess the results achieved, independently and in collaboration with others
- seek and justify the choice of applied technical joint property, research reports and other material of relevance to the profession
- assess practice-oriented and theoretical issues and justify the choice of relevant solution models
- apply general linguistic and scientific knowledge to solve tasks within the profession
- apply innovative methods and solutions in connection with given professional issues
- apply general information technology of significance to the profession
- apply general numeracy.

Competencies:

The graduate has acquired the competencies needed to:

- identify own knowledge and learning needs based on the knowledge, skills and competencies acquired within the core area
- acquire new knowledge within the core area and translate it into practice in relation to the profession

- present relevant arguments in favour of and take a critical approach to interdisciplinary issues both orally and in writing
- independently engage in disciplinary and interdisciplinary collaboration and assume responsibility within the framework of professional ethics
- handle complex and development-oriented situations in relation to work and/or studies
- participate in the solution of theoretical and methodical issues within the profession.

No. of ECTS

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

Core area Business

The core area includes business operations, administration and law.

Learning objectives

Knowledge

The graduate has acquired knowledge of:

- principles, methods and rules applied within entrepreneurship
- basic principles, theories, methods and tools related to business economics and staff management
- the hierarchy of norms and legal method
- basic rules related to property law within the laws of contract and tort and in practice
- contractual relationships
- the possibilities and rules of the profession for establishing a business
- corporate and organisational forms in connection with the establishment and operation of businesses as well as the strategies and business plans forming the basis of the choices made
- the social, cultural and ethical factors affecting the establishment, operation and administration of the business
- the basic elements of building economics.

Skills

The graduate has acquired the skills needed to:

- select and apply methods and tools for the organisation, management, project management, administration and operation of a business
- apply legislation in relation to business operations and administration
- apply accounting principles for the operation of a business as well as the industry's budgeting, accounting and tendering methods and tools
- apply industry-relevant forms and standard contracts in relation to the business' management, planning and follow-up
- scrutinise the legal basis for contract formation and prepare risk assessments in the business
- manage risks and prepare risk assessments in projects
- handle the management and control of small businesses, independently and in collaboration with others.

Competencies

The graduate has acquired the competencies needed to:

- identify own knowledge and learning needs based on the knowledge, skills and competencies acquired within the core area
- acquire new knowledge within the core area and translate it into practice in relation to the profession
- establish a business within the fields of work of the profession, independently and in collaboration with others
- handle the management and control of small businesses, independently and in collaboration with others
- handle the tender process, independently and in collaboration with others
- manage projects professionally, temporally, financially and legally.

No. of ECTS

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

Core area Production

The core area includes building and construction work as well as project management.

Learning objectives

Knowledge

The graduate has acquired knowledge of:

- applied principles, theories and methods within innovation, planning, management and execution of production processes in the construction sector, and the ability to reflect on this
- general theoretical production concepts and methods used in practice in the industry, and the ability to reflect on this
- applied principles, theories, methods and tools for project management of building and construction work in the business or at the construction site, and the ability to reflect on this
- relevant communication and methods for communicating issues in production processes
- applied principles, theories, methods and tools for the financial management of construction.

Skills

The graduate has acquired the skills needed to:

- analyse, assess and apply up-to-date, relevant production management and planning methods and tools
- manage projects independently and in collaboration with other professions, including communicate technical production issues to other stakeholders

- combine and incorporate relevant experience, knowledge and research results in the solution of production processes
- analyse and understand issues in production processes and collaborate on solutions in interdisciplinary contexts
- assess and understand human, environmental, financial and technological aspects of production
- assess and understand social, cultural and ethical contexts in connection with production and the collaboration on its execution
- communicate practice-oriented issues and solutions
- incorporate 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 an appropriate level of information and with appropriate properties data with the aim of production, and classify structures, building parts and components via a coherent and recognised classification system
- manage risks in projects
- analyse, assess and apply tools for the financial management of parts of construction
- prepare tender documents
- analyse and assess project and production material in relation to quality assurance
- choose production methods
- handle tender, agreement and organisation forms
- apply the basic tools and production methods of the industry in practice
- choose production methods and materials in relation to tender requirements and specifications.

Competencies

The graduate has acquired the competencies needed to:

- identify own knowledge and learning needs based on the knowledge, skills and competencies acquired within the core area
- acquire new knowledge within the core area and translate it into practice in relation to the profession
- plan and manage the production of complex building and construction projects, independently and in collaboration with other professions
- handle the communication between users, clients, authorities, consultants and contractors on the production of complex building and construction projects 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 such data between different systems for use in the production
- handle tender, agreement and organisation forms
- handle the financial management of building and production processes.

No. of ECTS

The core area constitutes 35 ECTS points out of the total 210 ECTS points for the programme.

Core area Design

The core area includes construction, design and project management.

Learning objectives

Knowledge

The graduate has acquired knowledge of:

- principles, theories, methods and tools within design and design management, including the ability to reflect on the methods chosen for a given task
- the phases or information levels in the design, including the ability to reflect on the related information needs
- design and innovation methodologies, interdisciplinary forms of collaboration with other professions on the design and collaboration with clients, authorities and other stakeholders regarding the planning and design of building and construction projects
- architecture, known and new building techniques, styles, building methods, sustainability, cultural heritage and materials
- static analysis, load bearing calculations, estimates in connection with the design and execution of building and construction projects
- building physics, moisture and energy conditions, estimates and the incorporation of technical installations in connection with the design and execution of building and construction projects
- quality assurance, the working environment and document handling in connection with project management, from planning to operation of building and construction projects
- the development of digital building information models consisting of relevant information in relation to the design process.

Skills

The graduate has acquired the skills needed to:

- plan new construction and renovation projects in collaboration with other professions by incorporating building legislation, standards, sustainability, technical joint property and new knowledge on building and construction
- master known and applied design, project management and communication tools in the profession
- prepare statistical analyses and apply estimate dimensioning
- assess the physical properties and indoor climate of buildings as well as prepare energy calculations for buildings and be able to apply them in practice
- set out utility supply systems and incorporation possibilities for technical installations
- develop plans for quality assurance, health and safety for building and construction projects
- communicate practice-oriented issues and solutions
- assess practice-oriented and theoretical issues and justify the choice of relevant solution models

- develop a digital building information model comprising structures, building parts and components at the appropriate level of information and with properties data relevant to the planning process
- prepare appropriate operation and maintenance plans, renovation and/or alteration proposals and other actions by means of surveying and condition checks.

Competencies

The graduate has acquired the competencies needed to:

- identify own knowledge and learning needs based on the knowledge, skills and competencies acquired within the core area
- acquire new knowledge within the core area and translate it into practice in relation to the profession
- manage the design and planning of complex building and construction projects, independently and in cooperation with other professions
- independently handle project, quality and document management in a building and construction project
- identify and formulate central issues and requirements in connection with building and construction
- handle technical construction work in accordance with the building architecture, while meeting the sustainability requirements for complex building and construction projects
- assess and select technical, innovative and sustainable design solutions and materials for use in building structures in connection with complex building and construction tasks
- handle digital building information models and transfer and extract data between different information systems and professional models
- participate in interdisciplinary collaboration on measuring and surveying in connection with building and construction tasks
- handle technical construction work in accordance with the building architecture.

No. of ECTS

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

Core area Survey

The core area includes measuring, setting out and condition surveys

Learning objectives

Knowledge

The graduate has acquired knowledge of:

- the principles, theories, methods and tools applied in connection with measuring and setting out in relation to building and construction work
- instruments used for measuring and setting out buildings and the accuracy obtained through measuring.

Skills

The graduate has acquired the skills needed to:

- assess setting-out tasks, understand and use site plans with contour lines and other map features applied in the building and construction industry
- record and assess the condition of building components, constructions and buildings
- assess practice-oriented and theoretical issues and justify the choice of relevant solution models
- communicate practice-oriented and professional issues as well as solutions to partners and users.

Competencies

The graduate has acquired the competencies needed to:

- identify own knowledge and learning needs based on the knowledge, skills and competencies acquired within the core area
- acquire new knowledge within the core area and translate it into practice in relation to the profession
- independently participate in interdisciplinary collaboration on setting out and surveying in connection with building and construction tasks and take on responsibility within the framework of professional ethics.

No. of ECTS

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

3.4. Compulsory programme elements

Compulsory programme element Residential building

The compulsory programme element consists of an interdisciplinary project, where the students work with a specific, minor residential building. The programme element includes the following core areas:

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

Learning objectives

Knowledge

By the end of the compulsory programme element, the student has acquired knowledge of:

- the correlation between the various professional issues in relation to the compulsory programme element theme

- relevant communication theories and methods to convey issues in the field of construction, including digital media within the compulsory programme element theme
- tools and standards in connection with the compulsory programme element theme
- the basic professional and technical disciplines of the profession as well as relevant documentation within the compulsory programme element theme
- general working methods in relation to the compulsory programme element theme
- working methodology through methods and practice for use in connection with planning, collaboration and learning
- methods and practice for use in connection with planning, collaboration and learning
- general, applied principles for mathematics and construction physics of relevance to the profession
- basic static principles
- data collection and documentation in connection with design tasks
- industry partners, professional areas and the construction process in relation to the compulsory programme element theme
- applied principles, theories, methods and tools for project management of building and construction work in the business or at the construction site in relation to the compulsory programme element theme.

Skills

By the end of the compulsory programme element, the student has acquired the skills needed to:

- apply methods and tools to collect and analyse information in relation to the compulsory programme element theme
- convey practice-oriented and professional issues as well as solutions related to the compulsory programme element theme to relevant partners and users
- apply relevant communication and methods for conveying issues in production processes
- apply design methods in relation to the compulsory programme element theme as well as methods for planning the building process
- structure own work and the work of the working group at starter level
- assess setting-out tasks, understand and use site plans with contour lines and other map features applied in the building and construction industry.

Competencies

By the end of the compulsory programme element, the student has acquired the competencies needed to:

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

No. of ECTS

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

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

Requirements for participating in the second semester exam

The objectives of the study programme can only be achieved if all students act, in collaboration with their fellow students and the responsible teachers, as engaged and active participants in the development, analysis and fulfilment of the assigned project-based tasks.

1. It is therefore a requirement that students in the first and second semesters attend a minimum of 70% of all scheduled classes in order to be considered eligible to participate in the exam.
 - a. All types of absence are considered absence.
 - b. The individual student's attendance will be *registered daily* for all scheduled subjects.
2. It is a further requirement that the individual students submit the mandatory written assignments related to the formal learning objectives of the individual subjects. These assignments *must* be submitted on time, in accordance with the submission date (and time) stated for each individual assignment.
3. At the beginning of each semester, the students are provided with the semester description and schedule. In this description, certain mandatory activities and assignments are stated. If students do not meet the requirements and/or do not submit the required assignments, they will have used *one* out of *three* exam attempts.
4. A student can use an exam attempt by not fulfilling the requirements for either attendance or submission of assignments. A student can only use one exam attempt without passing in each semester.

Compulsory programme element Building up to 2½ storeys

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

The compulsory programme element includes the following core areas:

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

Learning objectives

Knowledge

By the end of the compulsory programme element, the student has acquired knowledge of:

- the correlation between the various professional issues in relation to the compulsory programme element theme
- relevant communication theories and methods to convey issues in the field of construction, including digital media within the compulsory programme element theme
- tools and standards in connection with the compulsory programme element theme
- the basic professional and technical disciplines of the profession as well as relevant documentation within the compulsory programme element theme
- general working methods in relation to the compulsory programme element theme
- relevant social, environmental, financial and technological aspects of the production process
- working methodology through methods and practice for use in connection with planning, collaboration and learning
- principles, methods and rules applied within entrepreneurship
- basic contractual relationships concerning construction
- general theoretical production concepts and methods applied in practice
- the development of digital building information models consisting of relevant information in relation to the design process
- applied principles, theories, methods and tools for the financial management of construction
- specific production tools applied in practice in the industry.

Skills

By the end of the compulsory programme element, the student has acquired the skills needed to:

- apply methods and tools to collect and analyse information in relation to the compulsory programme element theme
- convey practice-oriented and professional issues as well as solutions related to the compulsory programme element theme to relevant partners and users
- assess theoretical and practice-oriented issues concerning design in relation to the compulsory programme element theme and justify the chosen actions and solutions
- apply design methods in relation to the compulsory programme element theme as well as methods for planning its execution
- analyse, assess and apply tools for the financial management of parts of construction
- analyse and assess project and production material in relation to quality assurance.

Competencies

By the end of the compulsory programme element, the student has acquired the competencies needed to:

- identify own knowledge and learning needs based on the knowledge, skills and competencies acquired in the course of the completed compulsory programme elements

- independently engage in disciplinary and interdisciplinary collaboration and assume responsibility within the framework of professional ethics
- apply the acquired knowledge and skills from the compulsory programme element to carry out substantiated analysis of relevant issues in the field of construction and their solutions
- handle the design of a building in relation to the compulsory programme element theme and account for the principles of the execution
- handle tender, agreement and organisation forms.

No. of ECTS

30 ECTS points out of the total 210 ECTS points for the programme.

Exams

Concluded with one overall exam (see further details under exams).

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

Requirements for participating in the second semester exam

The objectives of the study programme can only be achieved if all students act, in collaboration with their fellow students and the responsible teachers, as engaged and active participants in the development, analysis and fulfilment of the assigned project-based tasks.

1. It is therefore a requirement that students in the first and second semesters attend a minimum of 70% of all scheduled classes in order to be considered eligible to participate in the exam.
 - a. All types of absence are considered absence.
 - b. The individual student's attendance will be *registered daily* for all scheduled subjects.
2. It is a further requirement that the individual students submit the mandatory written assignments related to the formal learning objectives of the individual subjects. These assignments *must* be submitted on time, in accordance with the submission date (and time) stated for each individual assignment.
3. At the beginning of each semester, the students are provided with the semester description and schedule. In this description, certain mandatory activities and assignments are stated. If students do not meet the requirements and/or do not submit the required assignments, they will have used *one* out of *three* exam attempts.
4. A student can use an exam attempt by not fulfilling the requirements for either attendance or submission of assignments. A student can only use one exam attempt without passing in each semester.

Compulsory programme element Industrial building and prefabrication

The compulsory programme element includes the following core areas:

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

Learning objectives

Knowledge

By the end of the compulsory programme element, the student has acquired knowledge of:

- the correlation between the various professional issues in relation to the compulsory programme element theme
- relevant communication theories and methods to convey issues in the field of construction, including digital media within the compulsory programme element theme
- tools and standards in connection with the compulsory programme element theme
- industrial production and execution methods in relation to the compulsory programme element
- industrial constructions, planning and control tools, technical installations, static principles and documentation in relation to the compulsory programme element theme
- mathematical and physical solutions in relation to the compulsory programme element theme
- basic principles, theories, methods and tools related to business economics and staff management
- the structure of rules of law and legal method
- basic rules related to property law within the laws of contract and tort and in practice
- the possibilities and rules of the profession for establishing a business
- corporate and organisational forms in connection with the establishment and operation of businesses as well as the strategies and business plans forming the basis of the choices made
- the social, cultural and ethical factors affecting the establishment, operation and administration of the business
- applied principles, theories, methods and tools for project management of building and construction work in the business or at the construction site, and the ability to reflect on this
- 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 has acquired the skills needed to:

- apply methods and tools to collect and analyse information in relation to the compulsory programme element theme
- convey practice-oriented and professional issues as well as solutions related to the compulsory programme element theme to relevant partners and users

- select and apply methods and tools for the organisation, management, project management, administration and operation of a business
- apply legislation in relation to business operations and administration
- apply accounting principles for the operation of a business as well as the industry's budgeting, accounting and tendering methods and tools
- apply the industry's methods, forms and standard contracts in relation to business management, planning and follow-up
- scrutinise the legal basis for contract formation and prepare risk assessments of the business
- analyse, assess and apply up-to-date, relevant production management and planning methods and tools
- incorporate 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 an appropriate level of information and with appropriate properties data for the purpose of production, and classify structures, building parts and components via a coherent and recognised classification system.

Competencies

By the end of the compulsory programme element, the student has acquired the competencies needed to:

- identify own knowledge and learning needs based on the knowledge, skills and competencies acquired in the course of the completed compulsory programme elements
- independently engage in disciplinary and interdisciplinary collaboration and assume responsibility within the framework of professional ethics
- apply the acquired knowledge and skills from the compulsory programme element to carry out substantiated analysis of relevant issues in the field of construction and their solutions
- analyse and select methods and systems to optimise information flows in a building and construction project.

No. of ECTS

25 ECTS points out of the total 210 ECTS points for the programme.

Exams

Concluded with one exam (see further details under exams).

Compulsory programme element Multi-storey building

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

The compulsory programme element includes the following core areas:

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

Learning objectives

Knowledge

By the end of the compulsory programme element, the student has acquired knowledge of:

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

Skills

By the end of the compulsory programme element, the student has acquired the skills needed to:

- apply methods and tools to collect and analyse information in relation to the compulsory programme element theme
- communicate the chosen methods and technical solutions to relevant partners
- apply design methods in relation to the compulsory programme element theme as well as methods for planning and managing the execution of the work
- assess different methods and procedures and make a justified choice
- translate a chosen management concept into practical planning in relation to design and execution
- manage projects independently and in collaboration with other professions, including communicate technical production issues to other stakeholders
- combine and incorporate relevant experience, knowledge and research results in the solution of production processes
- analyse and understand issues in production processes and collaborate on solutions in interdisciplinary contexts
- assess and understand relevant social, environmental, financial and technological aspects of the production process.

Competencies

By the end of the compulsory programme element, the student has acquired the competencies needed to:

- identify own knowledge and learning needs based on the knowledge, skills and competencies acquired in the course of the completed compulsory programme elements

- apply the acquired knowledge and skills from the compulsory programme element to carry out substantiated analysis of relevant issues in the field of construction and their solutions
- participate in disciplinary and interdisciplinary collaboration
- handle information model data and exchange such data between different systems for use in the production
- translate analysis and project material into execution of the compulsory programme element theme
- manage the design and execution process of a multi-storey building, taking into account relevant social, environmental, financial and technological aspects
- prepare and apply digital building information models as well as transfer and extract data between different information systems and professional models
- create innovative construction solutions with a view to optimising production.

No. of ECTS

20 ECTS points out of the total 210 ECTS points for the programme.

Exams

Concluded with one exam (see further details under exams).

Compulsory programme element Renovation

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

The compulsory programme element includes the following core areas:

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

Learning objectives

Knowledge

By the end of the compulsory programme element, the student has acquired knowledge of:

- the correlation between the various professional issues in relation to the compulsory programme element theme
- relevant communication theories and methods to convey issues in the field of construction, including digital media within the compulsory programme element theme
- tools and standards in connection with the compulsory programme element theme
- structures, sustainability, planning and control tools, technical installations, static principles and documentation in relation to the compulsory programme element theme
- design and execution methods in relation to the compulsory programme element theme
- various energy-optimising renovation and alteration concepts.

Skills

By the end of the compulsory programme element, the student has acquired the skills needed to:

- apply methods and tools to collect and analyse information in relation to the compulsory programme element theme
- convey practice-oriented and professional issues as well as solutions related to the compulsory programme element theme to relevant partners and users
- assess and understand social, cultural and ethical matters in connection with the production and the collaboration on its execution
- assess theoretical and practice-oriented issues concerning the compulsory programme element theme and make justified choices
- apply project design and sustainable methods in relation to the compulsory programme element theme as well as methods for planning the execution of the work.

Competencies

By the end of the compulsory programme element, the student has acquired the competencies needed to:

- identify own knowledge and learning needs based on the knowledge, skills and competencies acquired in the course of the completed compulsory programme elements
- acquire new knowledge and translate it into practice in relation to the profession
- establish a business within the fields of work of the profession, independently and in collaboration with others
- handle the management and control of small businesses, independently and in collaboration with others
- handle the tender process, independently and in collaboration with others
- manage projects professionally, temporally, financially and legally
- plan, quality assure and manage the production of complex building and construction projects, independently and in collaboration with other professions
- handle the communication between users, clients, authorities, consultants and contractors on the production of complex building and construction projects or building components
- involve relevant social, environmental, financial and technological aspects in the production process
- apply the acquired knowledge and skills from the compulsory programme element theme to carry out technical construction work based on a substantiated analysis of relevant issues in the field of construction and their solutions
- manage the project design and production process for a renovation and alteration project, taking into account relevant social, environmental, financial and technological aspects
- participate in disciplinary and interdisciplinary collaboration
- document the planning of own work based on self-management principles.

No. of ECTS

20 ECTS points out of the total 210 ECTS points for the programme.

Exams

Concluded with an exam (see further details under exams).

3.5 Elective programme elements (electives)

In their second semester, students are introduced to the electives. Each elective consists of three independent courses, each concluded with an exam, see item 5. The three courses are placed in the

third, fourth and fifth semesters, respectively. In the third and fourth semesters, the electives are organised as a 3-week course (5 ECTS). In the fifth semester, the electives are organised as a 10-week course (15 ECTS). All electives conclude the semester in question. In the sixth semester, students can choose to do an internship with a company that represents the elective which the student has completed in the third to fifth semesters. The elective programme elements are organised into the following five electives:

Design Consultancy

ECTS: 25

Design Consultancy introduces the students to the architectonic design of a mandatory spatial task, thereby enabling them to solve individual architectural tasks as a conceptual design in collaboration with architects.

The elective encourages students throughout the course to develop a common understanding of the developed environment and the architectonic issues in the broadest sense.

The students learn and apply a common terminology to describe and discuss spatial and architectonic conditions. The preparation of individual projects is central to the teaching and is supplemented with lectures, excursions and exercises.

In addition to the project, the students are introduced to digital sketching and presentation tools. Design Consultancy furthermore contains an introduction to the history of architecture as well as architectural understanding.

Third semester

Learning objectives

Knowledge

The student has acquired knowledge of the following:

- Architecture

The ability to understand the following practice, theory and method:

- Analyse and understand a design based on knowledge of architectonic ideas.

The ability to reflect on the following:

- Relations between a given design and historical, cultural and natural contexts.
- Architectural history/style.
- Architectural understanding; insight into and understanding of the integrating character of architecture with respect to the involvement of human relationships, symbolic values, identity and experienced values in relation to the semester assignment.

- The whole and parts; understanding of the compliance with the selected architectonic form and its detailing.
- Consistency between space, size and function.

Skills

The student has acquired the skills to apply the following methods and tools:

- Sketching, visualisation and presentation using digital tools.
- Sketching tools (model and communicative sketches) for clarification of simple, spatial conditions.

The skills to master the following:

- Prepare a conceptual design for a simple, spatial context.
- Technical terminology promoting a reflective and discursive working method.

The ability to assess the following types of problems:

- The static system and climatic conditions in relation to the architecture of the building.

The ability to propose solutions within the following areas and justify them:

- Choose specific solutions to functional and technical problems by carrying out analyses.

The ability to communicate the following issues:

- Project issues in relation to design, function and construction.

Competencies

The student has acquired the competencies to handle the following complex situations:

- Place and identify the building functions in a logical context.

Independently participate in:

- A design team's development of simple architectural projects.
- Assume responsibility within the following areas:
- Construction and planning.
- Identify own learning needs and develop new knowledge, skills and competencies:
- Seek solutions to architectonic problems through own literature studies and own measuring and surveys.

Fourth semester

Knowledge

The student has acquired development-oriented knowledge of the following:

- Relations between historical, cultural and natural contexts and complex design.
- Modern architecture.

The ability to understand the following practice, theory and method:

- 'Read' the architecture and understand the underlying ideas.

The ability to reflect on the following:

- Architectural understanding; insight into and understanding of the integrating character of architecture with respect to the involvement of human relationships, symbolic values, identity and experienced values in relation to the semester assignment.

Skills

The student has acquired the skills to apply the following methods and tools:

- Sketching, visualisation and presentation using digital tools.
- Sketching tools (model and communicative sketches) for clarification of complex, spatial conditions.

The skills to master the following:

- Prepare a conceptual design summarising the complex, spatial contexts within a given geometric framework.
- The whole and parts; understanding of the compliance with the selected architectonic form and its detailing.
- Apply technical terminology promoting a reflective and discursive working method.
- Set out several functions and their mutual positions using function charts and analyses.

The ability to assess the following types of problems:

- The static system and climatic conditions in relation to the architecture of the building.
- Technical and architectonic treatment of the façade. The façade and spatial separation between inside and out.
- Architecture and daylight.

The ability to propose solutions within the following areas and justify them:

- Choose solutions to functional and technical problems by carrying out analyses.

The ability to communicate the following issues:

- Issues in relation to design, function and construction.

Competencies

The student has acquired the competencies needed to:

- Handle the following complex situations:
- Building access and rescue routes in accordance with fire-related, static and climatic principles as well as the architectonic main principles.

Independently participate in:

- A design team's development of complex architectural projects.
- Assume responsibility within the following areas:
- Select and present solutions in relation to technical problems.
- Identify own learning needs and develop new knowledge, skills and competencies:
- Seek solutions to architectonic problems through own literature studies and own measuring and surveys.

Fifth semester

Knowledge

The student has acquired development-oriented knowledge of the following:

- Sustainability

The ability to understand the following practice, theory and method:

- Integrate sustainable solutions into an architectural project.

The ability to reflect on the following:

- Architectural history, styles in relation to the semester assignment.
- Urban context and the building's link to its surroundings.

Skills

The student has acquired the skills to apply the following methods and tools:

- Programmed process of architectonic sub-themes related to the development of a conceptual design (spaces, light, movement, structure, materials, colours etc.)

The skills to master the following:

- Preparation of a conceptual design with the theme: transformation/renovation of old buildings.
- Sketching, visualisation and presentation using digital tools.
- Sketching tools (model and communicative sketches) for clarification of complex, spatial conditions.

The student must, in relation to the overall semester theme, be able to assess the following types of problems:

- Principles for new building parts in existing buildings.

The ability to propose solutions within the following areas and justify them:

- Planning based on a sustainability point of view.
- Structural transformations of existing buildings.

The ability to communicate the following issues:

- Architectural description of the idea behind the conceptual design.
- Visualisation of the project/methodology and issues using digital tools.

Competencies

The student must independently participate in:

- A team's development of a renovation project.

Assume responsibility within the following areas:

- Functional analysis, structuring of plans.
- Identify own learning needs and develop new knowledge, skills and competencies:
- Seek solutions to architectonic problems through own literature studies and own measuring and surveys.

Construction Management

ECTS points: 25

Third semester

Learning objectives

Knowledge

The student has acquired:

- Development-oriented knowledge of the following:
- Individual trade contract

The ability to understand the following practice, theory and method:

- Production methods and aids.
- Construction management/project management and supervision of construction sites.
- Tender calculation and production planning.
- Geotechnical reports.
- Excavation, soil moving, compression of soil/Danish types of soil for laying foundations.
- Underground pipes and cables.
- Foundation laying methods.
- Concrete, reinforcement and shuttering.
- Quality assurance, quality management, quality costs of construction sites.
- Quality assurance of tender documents.
- Tender rules, Act on Tender Procedures.
- Contract forms.
- Layout of construction site.
- Construction site services.
- Health and safety plan.
- Construction management.
- Winter building, including winter work and weather precautions.
- Element installation, machines and aids at the construction site.
- Lean construction.

Skills

The student has acquired the skills to apply the following methods and tools:

Tender calculation and financial management.

- Review of tender documents – legal, geotechnical and technical
- Quality assurance of tender documents.
- Calculation of tenders, materials, wages, equipment and contribution margin.
- Review of tenders and tender lists.
- MS Project.

The ability to assess the following types of problems:

- Planning of time and resources, follow-up on schedule, critical path scheduling
- Critical path scheduling using different types of planning tools.

The ability to propose solutions within the following areas and justify them:

- Tender calculation and financial management
- Review of tenders and tender lists.
- Calculation of tenders, materials, wages, equipment and contribution margin (fixed costs etc.).
- Quality assurance of tenders and tender lists.

Fourth semester

Learning objectives

Knowledge

The student has acquired:

- Development-oriented knowledge of the following:
- Construction work

The ability to understand the following practice, theory and method:

- Execution of construction work

Skills

The student has acquired the skills to apply the following methods and tools:

- Tender calculation and financial management.
- Review of tender documents.
- Risk analysis and strategy.
- Estimate of tender documents.
- Work processes.
- Detailed schedule and resource allocation in MS Project.

The skills to master the following:

- Production methods and aids.
- Construction management/project management and supervision of construction sites.
- Production planning.
- Geotechnical reports.
- Excavation, soil moving, compression of soil/Danish types of soil for laying foundations.
- Underground pipes and cables.
- Foundation laying methods.
- Concrete, reinforcement and shuttering.
- Quality assurance, quality management, quality costs of construction sites.
- Quality assurance of tender documents.
- Construction site.
- Construction site services.
- Health and safety plan.
- Construction management, organisation.
- Winter building, including winter work and weather precautions.
- Element installation, machines and aids at the construction site.
- Lean construction.

The ability to assess the following types of problems:

- Planning of time and resources, follow-up on schedule, critical path scheduling
- Calculation of production times.
- 'What if' analyses in MS Project.

The ability to communicate the following issues:

- Production methods and processes.

- Planning of construction site production.
- Quality assurance, inspection plans.
- Production and resource management.
- Risk management.

Competencies

The student must independently participate in:

Management of production.

- Assume responsibility within the following areas:
- Flow charts.

Fifth semester

Learning objectives

Knowledge

The student has acquired development-oriented knowledge of the following:

- Renovation.
- Urban renewal.
- Energy renovation.
- Subsidies.

The ability to understand the following practice, theory and method:

- Prequalification (national/EU).
- Location-based scheduling.

The ability to reflect on the following:

- Planning/logistics.
- Conflict management.
- Areas of responsibility.
- Buildability (unforeseen circumstances).

Skills

The student has acquired:

- The skills to use the following methods and tools:
- Construction process/flowchart

The skills to master the following:

Content/activities in the contractor phases:

- Tender phase.
- Contracting phase.
- Mobility phase.
- Execution phase.
- Hand-over phase.

- Warranty period.

The ability to assess the following types of problems:

- Organisation of the hand-over phase.
- Hand-over, industry to industry.
- Risk management/QA.
- Organisation charts.
- Timelines (specification of date).

The ability to propose solutions within the following areas and justify them:

- Construction site factors/layout/conditions.
- Safety/working environment.

The ability to communicate the following issues:

- Site meeting/minutes/chairmanship.
- Construction accounts.

Competencies

The student must independently participate in:

- Construction organisation

Assume responsibility within the following areas:

- Submission of tenders.
- Planning and follow-up.
- Construction site conditions.
- Financial management (case).
- Risk management.

Identify own learning needs and develop new knowledge, skills and competencies:

- Conflict management
- Contractual relationships
- Processes.

Facilities Management (FM)

ECTS points: 25

Facilities Management introduces the students to solving and implementing FM tasks as a management discipline responsible for the physical framework for a business and the associated service functions.

Throughout the years, there have been several definitions and interpretations of the facilities management concept. KEA follows the European and Danish standard DS/EN 15221-1, which is endorsed by, among others, DFM-NET, Dansk Facilities Management Network, and CFM, Centre for Facilities Management, and which states that FM is the:

"Integration of processes within an organisation to maintain and develop the services that support and improve the efficiency of the primary activities".

Based on the standard, FM can be grouped into customer needs under the headings 'Areas and infrastructure' and 'People and organisation'. This corresponds to the commonly used subdivision between property management and services, also referred to as 'hard FM' and 'soft FM'. At KEA, emphasis will continue to be placed on 'hard FM'.

The elective encourages students throughout the course to work based on a strategic mindset and documented client/operator requirements supported by the financial framework for the selected project. During the elective period, the students learn and apply a common terminology to describe and discuss these requirements.

The preparation of a project is central to the teaching and is supplemented with lectures, excursions, study trips and exercises.

In addition to the project, the students are introduced to digital calculation and presentation tools.

Knowledge

The student has acquired knowledge of the following:

- The client's role, responsibilities and performance throughout the entire process, including building strategies
- Drawing up a strategic programme/performance requirements, including a conceptual design
- Planning and implementation of design reviews, including follow-up
- Acceptance of deviations from the specifications forming the basis for notification of acceptance of offer
- Continuous collection of data for the final design of the building – Building Information Modelling, BIM
- Preparation of proposal for tender documents for selecting and engaging an operating organisation

Understanding of the following theories, methods and practice:

- Environmental management based on the ISO 14000 family of standards
- Workplace assessments, health and safety management
- Information management by means of Building Information Modelling, BIM
- Lean philosophy and partnering
- Classification systems in the building sector – SfB, DBK, IFC etc.
- Quality management based on the ISO 9000 family of standards
- Certification of labour, environment and quality management systems
- Case law, arbitration, mediation and conciliation
- Risk management, professional liability insurance and guarantees
- The principles behind service descriptions and general conditions, such as AB, ABT etc.
- Formulation of performance requirements
- Successive calculation of time and price – based on general and project-specific requirements

- Prequalification of designers, contractors, construction product manufacturers and service providers
- Preparation of key figures for designers and contractors
- Strategies for project organisation, design, choice of contract type and contract management
- Rules for outsourcing services – Danish and EU rules

The ability to reflect on the following:

- Assumptions forming the basis for the planning, design and execution of construction projects
- Profitability for the investor and end-user in connection with sustainable measures
- Profitability for the investor and end-user in connection with working environment measures
- Advantages and disadvantages of the various classification systems
- Advantages and disadvantages of tender procedures based on performance requirements – compared to tender procedures based on traditional project material
- Advantages and disadvantages of successive calculation – compared to traditional time planning and budgeting
- The significance of time to pricing
- Advantages and disadvantages of making quick decisions on deviations in relation to the current contractual basis
- Advantages and disadvantages of different types of project organisations, contracts and contract management
- Advantages and disadvantages of different types of outsourcing services and contract management
- Advantages and disadvantages of the client avoiding having to take an active part in the design process
- Advantages and disadvantages of different ways of preventing and remedying disputes

Skills

The graduate has acquired the skills to apply the following methods and tools:

- Formulation of performance requirements at programme and conceptual design level
- Assurance of the application of Building Information Modelling, BIM

The skills to master the following:

- Prepare a proposal for a strategic programme
- Calculate and assess key figures
- Calculate total cost of ownership, including present value

Assess the following types of problems:

- When a designed concept deviates from the performance requirements defined in the strategic programme
- Sustainability based on a standardised method

Propose solutions within the following areas and justify them:

- The concept which, among several, best meets the performance requirements defined in the strategic programme
- Workplace assessment, space requirements and space management

Communicate the following issues:

- Why one concept, among several, best meets the performance requirements defined in the strategic programme

Competencies

The graduate has acquired the competencies needed to:

- Prepare a business plan and strategic programme for a business
- Plan and follow up on design reviews in the individual design phases

Independently participate in:

- Preparation of a needs profile based on the Real Estate Norm
- Preparation of an operating and maintenance plan based on a standard computer programme

Assume responsibility within the following areas:

- Documentation and registration of buildings – condition report/due diligence
- Presentation and argumentation in favour of selected solutions based on the strategic programme

Third semester

Knowledge

The student has acquired development-oriented knowledge of the following:

- Principles within the design of construction work

The ability to understand the following practice, theory and method:

- Geotechnology
- Excavation, soil moving and compression
- Foundation laying methods
- Underground pipes and cables
- Road and resurfacing work
- Digital terrain models
- Setting out with documentation
- Concrete, reinforcement and shuttering
- Review of tender documents
- Production methods and aids

- Construction management and supervision of construction work

Skills

The student has acquired the skills to apply the following methods and tools:

- Prepare a schedule for construction work based on performance data
- Measure quantities and prepare a tender list
- Fix the price of construction work, including materials, wages, equipment and contribution margin
- MS Project

The ability to assess the following types of problems:

- Understand and assess a geotechnical report

The ability to propose solutions within the following areas and justify them:

- Excavation work
- Dewatering and discharge work

Fourth semester

Knowledge

The student has acquired development-oriented knowledge of the following:

- Design of concrete structures
- Concrete technology

The ability to understand the following practice, theory and method:

- Building of concrete structures
- Bridge building principles
- Construction of railways
- Supporting walls
- Sheet piling and ground anchors
- Reinforcement and shuttering systems
- Gardening and landscaping

Skills

The student has acquired the skills to apply the following methods and tools:

- Excel, Word and Sigma
- Revit to prepare drawings
- Detailed schedule with resources and finances in MS Project

The skills to master the following:

- Financial estimate (Sigma)
- Choice of construction methods

- Review of tender documents
- Production methods and aids
- Contract management and supervision of construction work
- Production planning
- Quality assurance in practice

The ability to assess the following types of problems:

- Geotechnical factors
- Follow-up on planning
- Calculation of production times
- Legal matters regarding payment for extra work

The ability to propose solutions within the following areas and justify them:

- Construction site layout
- Foundation laying

The ability to communicate the following issues:

- Production methods and processes
- Planning of construction site production
- Production and resource management

Competencies

The student has acquired the competencies to handle the following complex situations:

Independently participate in:

- Management and planning of a construction contract

Assume responsibility within the following areas:

- Preparation of tender list for a concrete structure
- Quality assurance

Fifth semester

Knowledge

The student has acquired:

Development-oriented knowledge of the following:

- Renovation of sewer conduits
- Urban renewal and landscaping
- Concrete renovation
- District heating systems
- Polluting soil
- Climate adaptation

The ability to understand the following practice, theory and method:

- Dimensioning methods for excavation, road and sewer work

- Choice of material
- Directional underdrilling
- No Dig (pipe renovation)

Skills

The student has acquired the skills to apply the following methods and tools:

- Excel, Word and Sigma
- Revit to prepare drawings
- Detailed schedule with resources and finances in MS Project

The skills to master the following:

- Dimensioning of sewer systems
- Dimensioning of electric mains
- Preparation of plans for sewer systems and cable work
- Design of road and site drainage
- Design of footpaths, pavements, roads and open spaces
- Preparation of plans for planting and paving

The ability to assess the following types of problems:

- Interim structures in connection with renovation of underground pipes and cables
- Choice of method for renovation of sewer systems
- Choice of method for concrete renovation
- Working conditions
- Division of responsibility

The ability to communicate the following issues:

- Quality management and related documentation
- Regulatory processing in connection with construction work.

Competencies

The student has acquired the competencies to handle the following complex situations:

- Planning/logistics.
- Conflict management

Independently participate in:

- The employer's supervisory organisation
- The contractor's construction management
- Design team

Assume responsibility within the following areas:

- Contact to authorities
- Quality assurance
- Planning and management
- Construction site layout
- Planning of winter preparedness

Identify own learning needs and develop new knowledge, skills and competencies:

- Environmental engineering
- Contractual relationships
- Law

3.5. Internship

The BA in Architectural Technology and Construction Management programme includes an internship period. The internship consists of discipline-specific tasks and is intended to prepare the students for work as a construction engineer.

The internship must take place with a private or public company/organisation in Denmark or abroad. The host company must be able offer the students internship assignments relevant to the profession as well as guidance.

Learning objectives

Knowledge

By the end of the internship, the student has acquired knowledge of:

- the practical work involved within the profession in the specific company
- the organisational, financial, administrative, societal and work-related situation of the specific host company.

Skills

By the end of the internship, the student has acquired the skills needed to:

- work with professional, complex issues within the professional area in the specific company
- solve theoretical and practical tasks in the company, independently or in collaboration with others
- communicate practice-oriented issues and solutions.

Competencies

By the end of the internship, the student has acquired the competencies needed to:

- translate the programme's core areas into theoretical and practical tasks in the specific company
- identify own learning needs and develop new knowledge, skills and competencies in relation to practice
- handle complex and development-oriented situations in work contexts
- be able to independently participate in disciplinary and interdisciplinary collaboration and assume responsibility within the framework of professional ethics.

No. of ECTS

30 ECTS points out of the total 210 ECTS points for the programme.

Exams

Concluded with one exam.

3.6. Rules on completion of the internship

The internship is aimed at future employment as a construction engineer and is organised based on the conditions and competence needs of the profession. It thus contributes, together with the other programme elements, to the students developing professional competencies. The host company/companies must be relevant to the elective within which the student wants to write the bachelor project.

The internship is placed in the sixth semester and has a duration of 20 weeks, corresponding to 30 ECTS points.

The internship is unpaid.

KEA's tasks

At KEA, the internship supervisor is responsible for the planning and completion of internships. The individual students are, however, obliged to make an effort to find a company.

The internship supervisor is responsible for:

- coordinating the internships, including cooperating with other educational institutions offering the programme
- providing the students with guidance in connection with the search for host companies
- ensuring that internship agreements are prepared, including that the learning objectives of the individual internship agreements are in line with the purpose, objectives, content, scope and level of the internship
- approving host companies
- finding new host companies
- ensuring the internship is organised in such a way that coherence is established between experience obtained and theory, and that the students have the opportunity to reflect on this
- maintaining contact with existing host companies
- sending questionnaires and evaluation forms
- carrying out evaluations of the students during the internship based on known criteria and procedures, including evaluation of log twice during the internship
- assessing the students' internship report in collaboration with selected teachers.

Together with selected teachers, the internship supervisor is responsible for following up on the students throughout the entire internship, including visiting selected host companies. The number of visits is agreed at the beginning of the internship period.

The internship supervisor acts as the student's contact person and must therefore be available to help solve academic, professional or personal problems.

Requirements and expectations for the host company

The host company must ensure coherence between the programme and the reality which the students will become part of upon graduation.

Approval of host companies is based on a specific assessment of the educational potential of the workplace. The internship supervisor is responsible for approval of the host company by approving the written internship agreement.

The host company must be able to meet the following requirements:

- It has knowledge of the programme and the constructor's fields of work.
- It has a technical environment related to the building/construction industry or chartered surveyor industry.
- There is generally at least one employee who is a qualified construction engineer, an architect, an engineer or a chartered surveyor within the relevant field of study or who has equivalent competence gained through education and/or several years of practical experience. The technical environment at the workplace must not be the sole responsibility of the person in question
- The host company must be prepared and in a position to offer the intern the necessary coaching, guidance and feedback.
- The internship must be organised as a learning process with the relevant guidance, reflection and evaluation and must take place according to a plan drawn up by the student together with the host company. The plan must be approved by the internship supervisor.
- A written employment contract must be concluded between the student and the host company, which describes the tasks to be performed, the time frame for the internship, the extent (in working hours) and the name etc. of the responsible contact person at the host company. The description of the tasks must be sufficiently detailed to provide a basis for establishing the internship's academic relevance and level. The internship supervisor may request additional information
- The host company may demand that the student sign a non-disclosure agreement
- Interns are subject to the same insurance, working environment and safety conditions as the rest of the employees
- The host company must be involved in the evaluation and approval of the internship by completing a form and signing the internship report

The host company must appoint a contact person to serve as the intern's internship supervisor.

Requirements and expectations for the intern

Interns must use their best abilities to solve the tasks which the company requires undertaken in connection with the internship and must take part in the company's day-to-day practice on an equal footing with the rest of the company's employees.

It is the responsibility of the student (with support from the internship supervisor) to:

- establish contact with a host company
- conclude an internship agreement before the internship commences
- take the initiative to draw up a plan for the internship together with the company, including help formulate the detailed learning objectives based on the overall objectives set out in the curriculum and have the plan approved by the internship supervisor
- keep a 'log' on Fronter of their internship for use in the internship report, which is evaluated twice during the internship
- prepare an internship report, have it approved by the company and submit it to KEA in due time.

Objective of the internship

The internship is an integral part of the study programmes. The objective is to provide the students with knowledge and understanding of practical conditions and methods, processes and work-related functions in a company, which the students can relate to the programme and the following work within the profession.

The objective of the internship for the students is to:

- gain insight into the requirements and expectations of companies to the constructor's, building technician's or surveying and mapping technician's knowledge, skills and attitudes relating to the work
- experience a construction engineer's day-to-day tasks over an extended period of time
- have the opportunity to undertake the duties of the profession in practice
- test the knowledge and skills acquired throughout the programme in practice
- gain experience with other perspectives, approaches, methods and tools in relation to solving specific tasks.

Including to:

- get ideas for a specialisation topic and where to seek knowledge about the topic
- get ideas for a bachelor project
- establish contact to the business community.

The objective for the company is to:

- have the opportunity to contribute to educating new construction engineers in a practical reality, while also having the intern solve specific tasks for the company
- establish contact with the study programme and the institution, thereby gaining insight into the topics, working methods and tools included in the teaching and the programme in general.

Including to:

- establish contact with students with a view to employment upon completion of the programme.

Learning objectives

The learning objectives for the internship period are formulated in a plan for the internship based on the below. The learning objectives are prepared by the student in collaboration with the host company and approved by the internship supervisor.

The learning objectives are based on the following general factors:

- The internship is organised based on the situation and competence needs of the profession and industry, such that it contributes to the students' development of professional competencies together with the other programme elements.
- This means that the intern must participate in the tasks currently undertaken by the company in a way that indicates which tasks are or may be performed by a construction engineer in the company.

- The objective is for the interns to eventually perform tasks independently.
- The interns must be subject to increasing demands and expectations as regards the independent performance of their duties in the company.
- The internship is organised so as to ensure coherence between experience obtained and theory.
- During the internship period, interns must register any processes, tasks and working methods etc. as a basis for establishing a personal compendium of experience (log). Notes and lessons learned should lay the foundations for reflection on the interns' learning during the internship in relation to theory and methods on the programme in general.
- The internship is to result in the exchange of knowledge, skills and competencies between the programme and the profession/business community.
- The interns must prepare an internship report to form the basis for an internal exam to be passed before they can continue their studies.
- The internship supervisor and selected teachers at KEA must read the students' internship report to ensure the teaching continuously incorporates relevant knowledge, skills and competencies.
- Through evaluation and feedback from the host company, KEA ensures that the internships are subject to ongoing quality assurance.

3.7. Teaching and working methods

The teaching is based on the understanding that learning is most efficient if students are given the opportunity to work with real-life assignments from, or inspired by, companies in relevant industries.

When choosing a project, the possibility of incorporating the academic and professional challenges throughout the semester into the project must be taken into account.

The students are given the opportunity to be involved in the various project phases, from preliminary analysis to realisation of the project. In connection with the project work, the students are faced with real-life problems to be solved based on the given theory, and are to organise the work in such a way that deadlines can be met. The students are furthermore provided with the necessary qualifications to work independently, thereby preparing them to complete the final project as an individual assignment.

This working method allows the students to gain an understanding of how problems are identified and analysed, how solution models are set up, and how the right solution is adopted.

3.8. Differentiated teaching

Not relevant

3.9. Reading foreign-language texts

Not relevant

4. Internationalisation

4.1. Studying abroad

The programme is organised in such a way that students can go on exchange in the third, fourth or fifth semester.

Information meetings are held at the beginning of each semester, where foreign educational institutions with which KEA has exchange agreements are presented, and the students are informed about the application procedure, the Erasmus+ programme and grants. Information on the partners is available on Fronter, and students have the opportunity to discuss their thoughts on where to go on exchange with the international coordinators.

To be taken into consideration in connection with exchange programmes, the following criteria must be met:

- The student must have participated in an information meeting.
- The deadline for applications announced on Fronter must be complied with.
- The student may not lack any programme elements from current or previous semesters (e.g. re-exams not passed).
- The student must have a realistic view on the possibilities and challenges of studying abroad, including any language barriers and foreign learning and exam cultures.
- The student must be registered on KEA's online mobility platform.

To be granted credit transfer for an entire semester abroad, the student must have obtained 30 ECTS points at the partner institution abroad. Normally, all courses are pre-approved by the international coordinator prior to departure. Credit transfer is granted when the semester abroad has been passed, and the transcript of records has been received and approved by the international coordinator.

To ensure that exchange students have sufficient English language skills to benefit from a stay abroad, it is recommended that students on a Danish programme take an English language course if they are unable to provide documentation that they have taken English at C level. Students must pay for the course and any tests themselves.

Certain (non-EU) partner universities may require that students take a language test. The test results must be submitted to the institution abroad before a letter of admission can be issued. The international coordinator can provide information on which institutions require this type of language test.

In the event that everyone cannot be offered a place at the preferred destination, KEA will select the most qualified applicants.

In addition to semester exchange, students can also choose a short mobility stay. Summer schools, winter schools, 2-week stays, Charrette etc. are organised regularly at partner universities. Information on the above is announced on Fronter on an ongoing basis. In connection with short mobility stays, the students cover any expenses related to travel, food and accommodation, and sometimes also tuition fees. Partner universities often grant scholarships.

4.2. Agreements with foreign educational institutions on parallel programmes

Not relevant

5. Programme tests and exams

The purpose of tests and exams is to document the extent to which the examinees comply with the learning objectives for the course/programme. In connection with tests and exams where the basis for assessment is a written group project followed by an oral presentation, an individual overall grade is awarded for the written project, the group presentation and the individual presentation.

All exams carry a weighting of 1 and are organised in such a way that the students are assessed individually, possibly based on a joint project combined with the students' individual work.

Most exams are multi-disciplinary exams where the students are examined in various subject areas simultaneously.

It is not possible to withdraw registration for exams on the programme. When starting a semester, students are automatically registered for the semester exams.

Exam scope and form on the programme are set out in the table below:

Semester	Basis for assessment	Exam form	Requirements
First semester		None	
Second semester	Group project with oral presentation	External exam	None
Third semester	Group project with oral presentation	Internal exam	None
Fourth semester	Group project with oral presentation	Internal exam	None
Fifth semester	Written group project with oral presentation	Internal exam	None
Sixth semester, internship	Portfolio	Internal exam	None
Seventh semester, specialisation	Written report	Internal exam	None
Seventh semester, bachelor project	Report with oral presentation	External exam	None

5.1. First-year exam

Electives, third semester	Written group project with oral presentation	Internal exam	None
Electives, fourth semester	Written group project with oral presentation	Internal exam	None
Electives, fifth semester	Written group project with oral presentation	Internal exam	None

Not relevant

5.2. Requirements for written assignments and projects

Specialisation

The specialisation is prepared individually and is intended to demonstrate the student's ability to perform theoretical studies and communicate the results. The specialisation must contain a discussion of the student's choice of methodology and independent consideration and discussion of the chosen theory. The specialisation must be handed in on the agreed date and is assessed without defence.

Requirements for the final project (bachelor project)

The student must prepare a written proposal for a bachelor project within the overall learning objectives. The problem statement must be central to the programme and the profession and include at least two of the traditional design phases of the construction. This is to ensure that the bachelor project contains a representative range of the programme objectives.

The problem statement is prepared in consultation with the supervisor and preferably together with a private or public company or developer and must account for the basis, focus areas and academic or technical issues on which the student intends to focus.

The bachelor project is examined and defended based on the prepared material, which is presented either on a board or digitally.

Spelling and writing skills are included in the assessment of the bachelor project; however, with the greatest emphasis being placed on the academic content.

The bachelor project is the final project on the programme and must, based on the core areas of programme, document that the following programme objectives have been achieved:

Knowledge

The graduate has acquired knowledge of

- the principles, theories and methods applied in the profession related to management, design, planning and execution of complex building and construction tasks, and is able to reflect on the application of the above theories and methods in different situations
- scientific concepts and methods relevant to the profession
- relevant communication theories and methods to communicate issues in the field of construction, including digital media within the area of construction and general areas of work
- the principles and models in the profession for establishing, operating and organising a business
- social and technological factors that influence the construction process, including issues related to energy, the working environment and sustainability in a local and global perspective

- managerial, social, linguistic, cultural and ethical aspects in the design of and cooperation on construction work.

Skills

The graduate has acquired the skills needed to

- assess and apply methods relevant to the profession within the management, design, planning and execution of complex building and construction tasks, including relevant digital programs and systems
- select relevant methods and justify the choice within the scope of the profession
- assess, combine and include relevant research knowledge in the solution of complex construction issues
- communicate knowledge of technical research and development to relevant parties by means of relevant media
- assess business-related and organisational issues
- assess and understand social and technological matters in connection with the design of buildings, including aspects related to energy, the environment and sustainability.

Competencies

The graduate has acquired the competencies needed to

- manage, design, plan and execute complex building and construction tasks, independently and in collaboration with other professions
- identify own knowledge and learning needs, and acquire new knowledge and translate it into professionally relevant practice
- handle the communication between users, developers, consultants, designers and contractors on the technical planning of, tenders for and execution of complex building and/or construction projects
- handle administrative tasks and manage projects within the building/construction area
- address social and technological aspects in the design and processing of construction projects
- handle social, cultural and ethical aspects in the design and processing of construction projects, as well as engage in management and cooperation contexts with others with different educational, linguistic and cultural backgrounds.

5.3. Use of materials and aids

All aids are permitted

5.4. Special exam conditions

Special exam conditions are offered for students with physical or mental impairment, for students with similar difficulties and for students whose native language is not Danish, if deemed necessary by the institution to provide the students concerned with equal opportunities in the exam situation.

5.5. Make-up exams and re-exams

Students who have been unable to complete an exam due to documented illness or for other documented reasons must be given the opportunity to take the exam as soon as possible. If the exam in question is scheduled for the final exam period, students will be given the opportunity to take the exam in the same exam period or immediately thereafter.

5.6. Exam language

All exams are held in English.

5.7. Commencement of studies exam

Not included in the programme

5.8. Use of own works and the works of others (plagiarism)

Students who intentionally or negligently, either during or after an exam, unlawfully obtain or provide help, submit someone else's work as their own or use their own previously assessed work without stating the source may be expelled from the exam. Any awarded grades will be withdrawn.

Attempts to cheat are treated in the same way as cheating.

5.9. Cheating and disruptive behaviour during exams

Students who, during an exam, unlawfully obtain or provide help to other students to complete an assignment or use materials and aids not permitted will be expelled from the exam. Students who exhibit disruptive behaviour may be expelled from the exam. In connection with expulsion, students will have used one exam attempt and any grades awarded will be withdrawn.

6. Other rules governing the programme

6.1. Rules on mandatory attendance

Students have a duty to participate in the programme as organised. There is no mandatory attendance in relation to the individual programme elements.

6.2. Credit transfer

The purpose of credit transfer is to allow students to build on already acquired qualifications, thereby avoiding the waste of resources for students and society associated with double degrees. Students are entitled to credit transfer if the conditions for such transfer are met.

Credit transfer is the result of KEA's assessment of whether previously completed courses correspond to the theoretical parts of the BA in Architectural Technology and Construction Management programme, and whether qualifications obtained through employment correspond to the objectives defined for the programme internship. Credit transfer is granted by reducing the extent of the programme or as an exemption from participating in parts of the programme – depending on the possibilities. Credit transfer for central parts of the programme requires a high degree of identity between previously completed programmes or internships and the BA in Architectural Technology and Construction Management programme.

The assessment of whether credit transfer is to be granted is based on documentation of completed courses and employment. Typical examples of documentation of previously completed courses are formal diplomas or certificates. In relation to employment, documentation is generally provided in the form of employment contracts, references or the like.

Credit transfer is granted on the sole basis of formal documentation.

6.3. Credit transfer agreements on subjects covered by the common part of the curriculum

There are no formal agreements.

6.4. Credit transfer agreements on subjects covered by the institution-specific part of the curriculum

There are no formal agreements

6.5. Criteria for assessment of active enrolment

Regular assessments are made on whether students qualify as active students. If a student has not participated in teaching activities for two consecutive weeks or if there is justified reason to believe that the student is inactive, the student will receive an email asking whether the student is still actively enrolled on the programme.

If the student does not confirm that he or she is actively enrolled on the programme within the deadline set out in the email, the student will receive yet another email on active enrolment. If the student does not confirm that he or she is actively enrolled within the specified deadline, the student will be disenrolled from the programme.

6.6. Disenrolment due to insufficient study activity

See above.

6.7. Exemption rules

KEA may, due to exceptional circumstances, grant exemptions from those rules in this curriculum that are solely laid down by KEA or in cooperation with the other educational institutions offering the programme.

6.8. Appeals

Appeals against exams are treated in accordance with the rules set out in Part 10 of Ministerial Order no. 1519 of 16 December 2013 on Examinations on Professionally Oriented Higher Education Programmes (the Examination Order).

When should an appeal be submitted? Appeals relating to exams and grading must be submitted within two weeks of the assessment (grade) being announced or published.

How should an appeal be submitted? Appeals must be submitted to kvalitet@kea.dk individually and in writing, stating the reasons for the appeal. Appeals submitted jointly by two or more students may be rejected.

What may appeals concern? You can submit an appeal concerning the basis for examination, the exam process or the assessment (grade).

Who handles the appeal? Appeals are normally handled by KEA Quality Assurance. This does not, however, apply to appeals concerning the basis for examination if the exam is organised by the Danish Agency for Higher Education. In such cases, the appeal is forwarded to the agency together with KEA's opinion.