

Curriculum

The Architectural Technology and Construction
Management programme
1 August 2016

INTRODUCTION

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

The objective of the curriculum is to

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

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

Legislation

The curriculum is under the authority of:

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

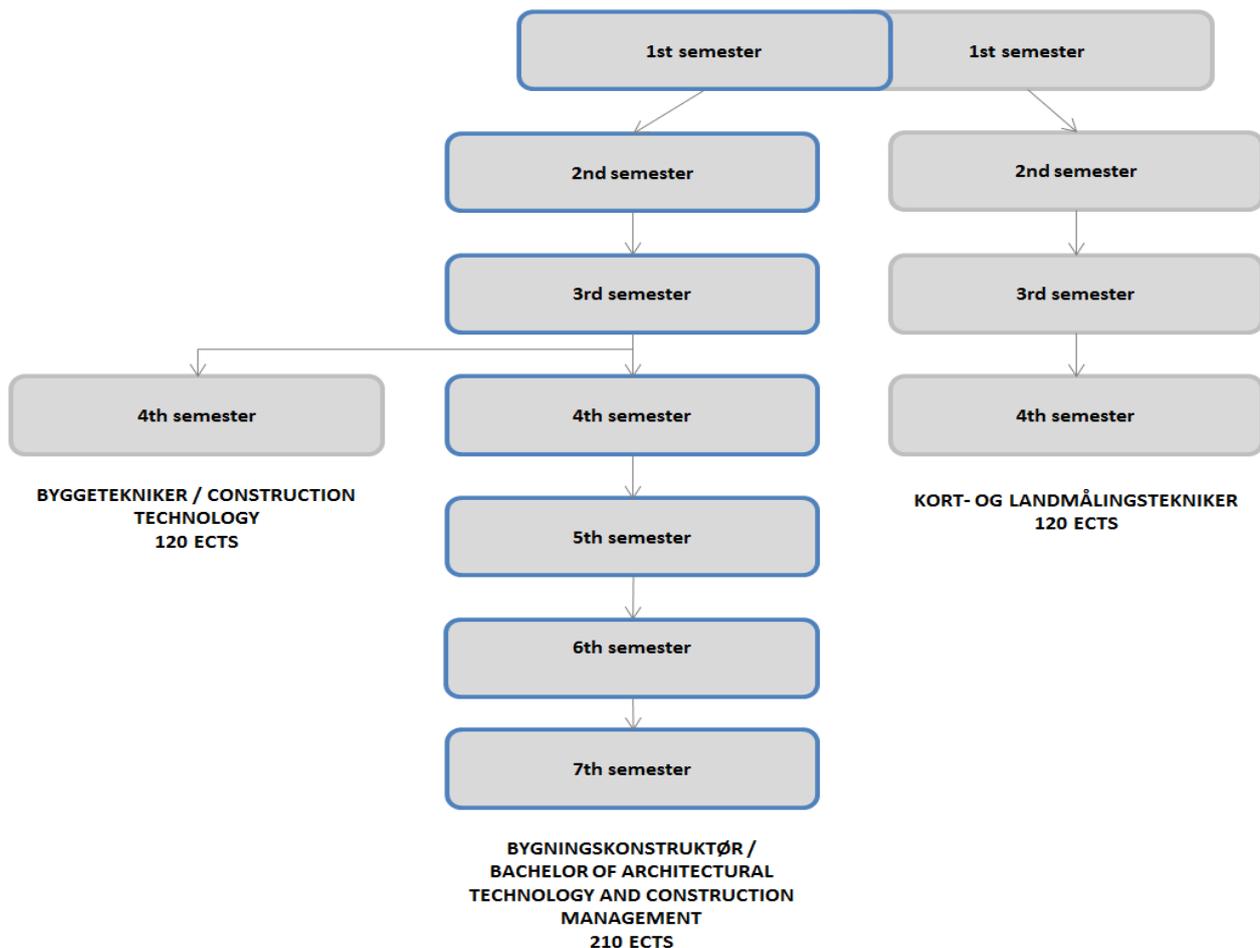
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1 PROGRAMME STRUCTURE

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

Figure 1: Programme structure



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

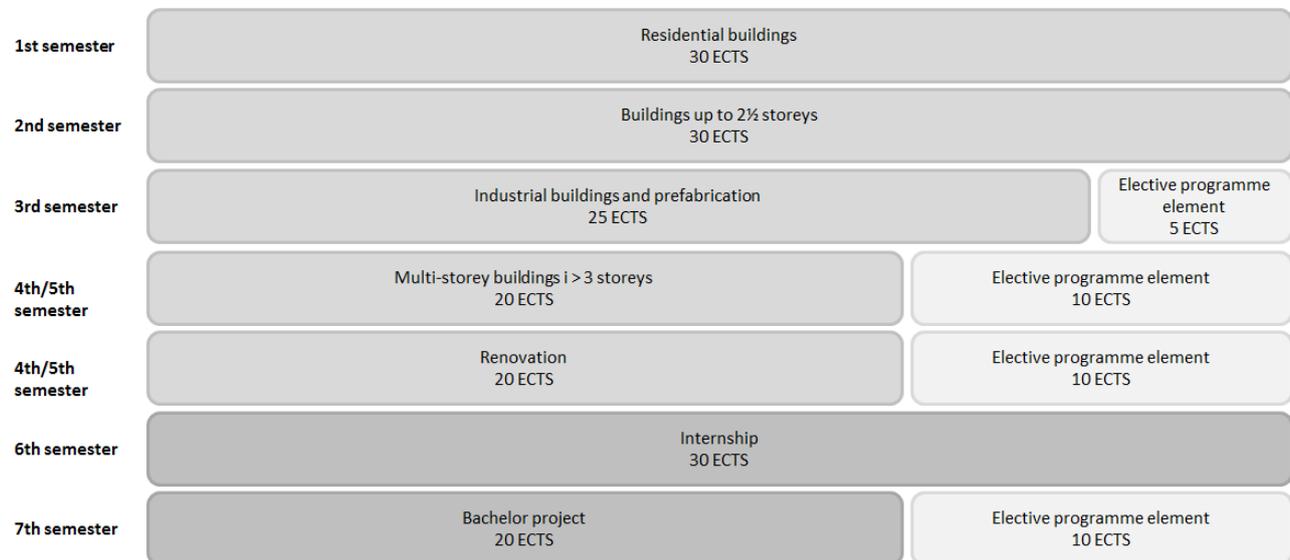
The Architectural Technology and Construction Management programme has a duration of 3½ years and is made up of seven semesters totalling 210 ECTS, which are composed of a number of compulsory and elective programme elements, including internship and bachelor project.

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

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

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

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



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

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

2 CURRICULUM – COMMON PART

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

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

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

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

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

	General	Company	Producti on	Design and planning	Surveying	Total
Residential buildings	10	0	5	10	5	30
Buildings up to 2½ storeys	10	5	10	5	0	30
Industrial buildings and prefabrication	5	5	10	5	0	25
Multi-storey buildings >3 storeys	5	0	5	10	0	20
Renovation	0	5	5	10	0	20
TOTAL	30	15	35	40	5	125

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

2.1 Core areas in the study programme

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

2.1.1 General

2.1.1.1 Contents

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

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

2.1.1.2 Learning objectives

Knowledge

The graduate should have knowledge of:

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

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

Skills

The graduate should be able to:

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

Competences

The graduate should have the competences to:

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

2.1.1.3 ECTS points

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

2.1.2 Company

2.1.2.1 Contents

The core area comprises business operations, administration and law.

2.1.2.2 *Learning objectives*

Knowledge

The graduate should have knowledge of:

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

Skills

The graduate should be able to:

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

Competences

The graduate should have the competences to:

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

2.1.2.3 *ECTS points*

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

2.1.3 Production

2.1.3.1 *Contents*

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

2.1.3.2 *Learning objectives*

Knowledge

The graduate should have knowledge of:

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

Skills

The graduate should be able to:

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

Competences

The graduate should have the competences to:

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

2.1.3.3 *ECTS points*

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

2.1.4 Design and planning

2.1.4.1 *Contents*

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

2.1.4.2 *Learning objectives*

Knowledge

The graduate should have knowledge of:

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

Skills

The graduate should be able to:

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

Competences

The graduate should have the competences to:

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

2.1.4.3 *ECTS points*

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

2.1.5 Surveying

2.1.5.1 *Contents*

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

2.1.5.2 *Learning objectives*

Knowledge

The graduate should have knowledge of:

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

Skills

The graduate should be able to:

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

Competences

The graduate should have the competences to:

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

2.1.5.3 *ECTS points*

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

2.2 Compulsory programme elements

2.2.1 Residential buildings, 1st semester

2.2.1.1 *Contents*

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

The compulsory programme element has the following core areas:

- General (10 ECTS)
- Production (5 ECTS)
- Project design (10 ECTS)
- Surveying (5 ECTS)

2.2.1.2 *Learning objectives*

Knowledge

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

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

Skills

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

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

Competences

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

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

2.2.1.3 *ECTS points*

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

2.2.1.4 *Exams*

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

2.2.2 Building construction up to 2½ storeys, 2nd semester

2.2.2.1 *Contents*

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

The compulsory programme element has the following core areas:

- General (10 ECTS)
- Company (5 ECTS)
- Production (10 ECTS)
- Project design (5 ECTS)

2.2.2.2 *Learning objectives*

Knowledge

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

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

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

Skills

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

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

Competences

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

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

2.2.2.3 *ECTS points*

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

2.2.2.4 *Exams*

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

2.2.3 Industrial buildings and prefabrication, 3rd semester

2.2.3.1 *Contents*

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

The compulsory programme element has the following core areas:

- General (5 ECTS)
- Company (5 ECTS)

- Production (10 ECTS)
- Project design (5 ECTS)

2.2.3.2 *Learning objectives*

Knowledge

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

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

Skills

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

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

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

Competences

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

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

2.2.3.3 ECTS points

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

2.2.3.4 Exams

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

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

2.2.4.1 Contents

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

The compulsory programme element has the following core areas:

- General (5 ECTS)
- Production (5 ECTS)
- Project design (10 ECTS)

2.2.4.2 Learning objectives

Knowledge

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

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

- scientific principles and documentation
- innovation theory and methods

Skills

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

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

Competences

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

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

2.2.4.3 *ECTS points*

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

2.2.4.4 *Exams*

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

2.2.5 Renovation, 5th semester

2.2.5.1 *Contents*

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

The compulsory programme element has the following core areas:

- Company (5 ECTS)
- Production (5 ECTS)
- Project design (10 ECTS)

2.2.5.2 *Learning objectives*

Knowledge

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

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

Skills

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

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

Competences

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

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

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

2.2.5.3 *ECTS points*

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

2.2.5.4 *Exams*

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

2.3 Internship

2.3.1.1 *Contents*

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

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

2.3.1.2 *Learning objectives*

Knowledge

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

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

Skills

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

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

Competences

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

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

2.3.1.3 *ECTS points*

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

2.3.1.4 *Exams*

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

2.4 The Bachelor Project

2.4.1.1 Contents

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

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

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

The process:

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

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

2.4.1.2 Learning objectives (programme end objectives)

Knowledge

The graduate should have knowledge of:

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

Skills

The graduate should be able to:

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

Competences

The graduate should have the competences to:

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

2.4.1.3 *ECTS points*

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

2.4.1.4 *Exams*

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

2.5 Credit transfer for compulsory programme elements and internship

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

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

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

Credit transfer can only be given based on formal documentation.

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

3 The curriculum's institutional section

Lillebaelt Academy may deviate from what the institution or the institutions have determined in this curriculum if it is well-founded in exceptional conditions. A further description of the dispensation rules and the procedure is to be found on the academy's homepage eal.dk.

3.1 Elective course elements

35 ECTS points have been allocated for elective course elements in the ATCM Course. The elective course elements are part of the semesters as follows:

- 3rd semester - 5 ECTS.
- 4th semester - 10 ECTS.
- 5th semester - 10 ECTS.
- 7th semester - 10 ECTS.

The elective course elements are based on the mandatory part and aims at giving the students the opportunity to tone their studies to more specific areas of interest, and demonstrate problem solving through writing reports and application of basic knowledge (scientific)-theoretical analysis methods.

3.1.1 Determination of the compulsory course elements

Lillebaelt Academy has decided that the compulsory course element on the 4th semester is Multi-storey buildings > 3 storeys and on the 5th semester it is Renovation.

3.1.2 Elective courses in the 3rd, 4th and 5th semester:

In the 3rd, 4th and 5th semester, students are offered 2-3 elective courses.

In the 3rd and 4th semester, the elective course is located in the last three weeks of the semester.

In the 5th semester, the elective course can either be distributed throughout the entire semester or the elective course may be located jointly.

The contents of the individual elective courses are shown in the semester descriptions for the 3rd, 4th and 5th semester.

The descriptions include the purpose of the course, an aim description of the course and the examination form.

The elective course is presented 3 months before the start-up of the upcoming semester after which the student have to chose.

3.1.3 Elective part in the 7th semester:

In the 7th Semester, students may freely choose the subject of their dissertation when it is relevant to the profession, and it can be approved by the student's allocated counsellor.

The aim is to enable the student to acquire methodical working processes for solving and understanding all imaginable forms of professional tasks through the formulation. The aim is, furthermore, that students acquire new professional knowledge in a self-selected area.

In the semester description is a detailed description of the contents in the 7th semester.

3.2 Information about the internship

At the Lillebaelt Academy all relevant information for the internship at Architectural Technology and Construction Management and Construction Technologies program is gathered in a training manual on Fronter.

3.2.1 Exchange semester

At the Architectural Technology and Construction Management course it is possible to exchange between the Danish ATCM course providers in all semesters.

As a student at Lillebaelt Academy have the opportunity to attend one semester at an international university or get an internship in a foreign company.

Information regarding the various forms of exchange semesters appears from the Academys website.

3.3 Test form and grading

A test is an exam event which results in one or more grades which have to be on the diploma in order to complete the education. Exams are normally held in continuation of a terminated course of study. The purpose of exams is to document to which extend the student fulfills the aims and demands which have been determined for the programme element/education.

The extent of the external exams is determined by the Ministerial Order on Academy Profession programmes and Professional Bachelor Programmes according to which at least three exams have to be held in the course of the study programme.

Education	Semester	Test form	Grade
BK / BT	1 st semester	Internal evaluation	Approved / not approved
BK / BT	2 nd semester	External evaluation	Grade
BK / BT	3 rd semester, compulsory	Internal evaluation	Grade
BK / BT	3 rd semester, elective	Internal evaluation	Approved / not approved
BK	4 th semester, compulsory	Internal evaluation	Grade
BK	4 th semester, elective	Internal evaluation	Approved / not approved
BT	4 th semester internship	Internal evaluation	Grade
BT	4 th semester final project	External evaluation	Grade
BK	5 th semester, compulsory	Internal evaluation	Grade
BK	5 th semester, elective	Internal evaluation	Approved / not approved
BK	6 th semester internship	Internal evaluation	Grade
BK	7 th semester elective / thesis	External evaluation	Grade
BK	7 th semester Bachelor project	External evaluation	Grade

BK: Architectural Technology and Construction Management

BT: Construction Technology

All exams which have been determined by the Ministerial Order have to be individual exams, which means, that the students are assessed individually, possibly on the basis of a common project in combination with the individual student's own work.

The exams are mainly interdisciplinary, in which several subject areas are examined at the same time.

Grades are given according to the 7-point scale and exams have to be passed individually in order for the student to continue. The grade is added to the diploma.

The extent of any additional exams is determined by each educational institution's own curriculum. This is in accordance with agreements made in the national group of curriculum.

On the Architectural Technology and Construction Management programme there are three external exams.

On the Construction Technology programme there are two external exams.

Further information is to be found under "Examination Regulations" on the Lillebaelt Academy's homepage eal.dk.

3.3.1 Spelling and formulating capacity

Spelling and formulating capacity is part of the final project. The assessment is a token of an overall evaluation of the professional content together with the spelling and formulating capacity. However, the professional content is the most important part.

3.4 Pedagogy and learning methods

3.4.1 The physical settings

At the Architectural Technology and Construction Management programme, we want the students to have the opportunity to be physically present on campus, even when there are no scheduled activities. Therefore, we try to create the best possible physical environment for the study.

3.4.1.1 *Learning design*

Each semester includes a theme. These themes ensure that there is a progression in learning and in the studio. Based on each theme an interdisciplinary / multidisciplinary project assignment is made.

3.4.1.2 *Problem-based learning.*

The overall educational starting point on Constructing Architects education is the concept of Problem Based Learning (PBL).

If that is the characteristic of PBL, that it is precisely that a problem is the starting point for the learning process in the process, it is thus suggested that quite a number of methods can function in a PBL concept.

A problem can be represented in many ways, in many arraying and with varied degrees of complexity, and consequently one can work with different types of problems in different methodological approaches.

3.4.1.3 *Methodological approaches:*

CASE describing a real-life problem described, more or less comprehensive and more or less closed, providing opportunity for the students to analyze, problematize and identify options.

PROJECT WORK typically based on a problem which participants perceive as socially and personally relevant and which are processed or resolved through a shorter or longer projects.

FIELD WORK organized as it is to collect, classify and process empirical data related to a specific problem situation.

CASE BASED LECTURE, where students have the opportunity to discuss the case before the lecture, whereby the students are more focused during the lecture.

ROLE PLAY, where the students are assigned different roles in a situation oriented conflict games etc., Whereby the problems that are going on, will be the driving force in the learning process.

STUDY ASSIGNMENTS, which may take the form of group tasks, and where the challenge is to consolidate, deepen and problematize a particular substance.

STRATEGY TASKS, based in eg a 'user problem "that must be solved.

PROBLEM TASKS, which focuses on one or more problems from the profession, the students must find solutions.

More specific methods could be mentioned, but as it appears, it is common to all methods that work with problem solving in a way so that relevant issues from the profession are reflected, and so that the students through the way to deal with the problems at the same time learn something about scientific methods.

The students meet all the above types of methods and types of tasks through the study.

3.4.1.4 *Profession learning*

Profession Learning the methods and learning contexts teachers use to develop students' professional knowledge and professional formation. So when, where and how students learn, to acquire profession-professionalism and professions formation. Contexts for professional learning can be different types of learning contexts or learning:

- **Dissemination room** where communication and dialogue about new material is the key.
- **Exercise room**, where students ponders and implement new knowledge and skills, typically through processing profession relevant exercises.
- **The project room** where students in groups working on different cases or projects typically interdisciplinary and near the profession field's challenges.
- **Internship room** where students are being trained.
- **Guidance room** where students tutored in assignments, internships etc.
- **Students' own studio room** where the students on their own and / or in study groups preparing to study, guidance and training.

The various rooms allow different learning and participation forms, surveys and thematisations of the profession professionalism and formation that the students must acquire.

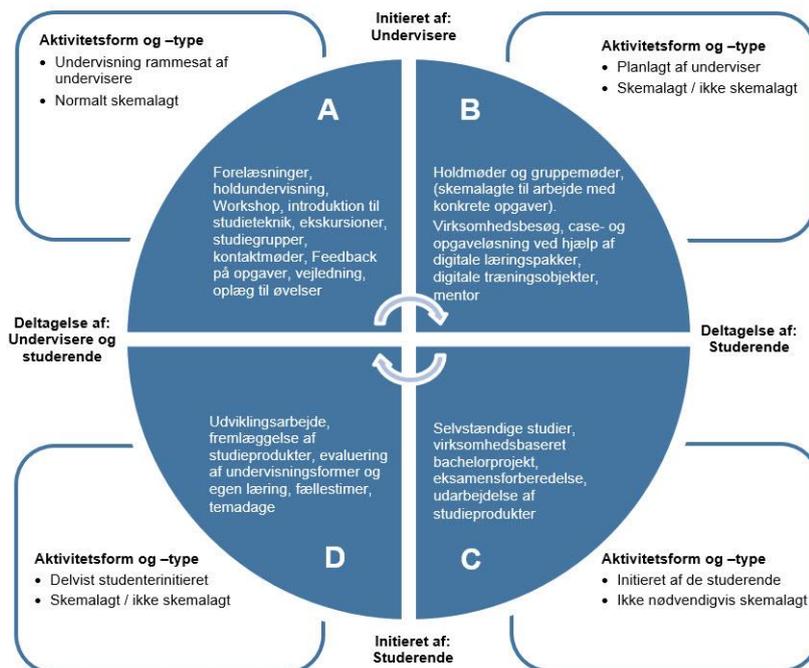
3.4.1.5 *Central teaching genres of the Constructing Architects education are:*

- Theoretical teaching in which key concepts and methods of dissemination.
- Discussion, which is debated concerning profession relevant themes.
- Exercises where specific skills and procedures trained, design analyzes.
- Studies in which students through projects, internships and field studies themselves create new knowledge.
- Articulation, situations and tasks where students are encouraged to express their knowledge, attitude and skills around the profession relevant themes.

New technology is a vital driving force in the development of new learning contexts and new didactic design - and thus new paths for professional learning.

An important use potential of the new technologies is that they can establish new learning in the classroom. Teaching no longer need to be situated physically with students and teachers in the same room and at the same time.

Figur 3: Study activity control



3.5 Study activity / presence

The teaching and pedagogy is based on problem-based learning where students are preferably working together in small groups or individually. For each student to get the benefits of group work, it is essential that each member of the group is actively studying and participating in the group.

4 Semester descriptions

Semester descriptions are descriptions of the individual subjects and their interdependencies. These descriptions are updated prior to each semester and descriptions are available on the academy's homepage.

5 Student counselling

The school offers and implements the guidance of applicants and students. The guidance covers three areas: Guidance to the study - the time of study and the study's final phase.

6 Credit and further education

6.1.1 Within the same courses

For students who leave the program without having completed, the school will issue documentation for passed parts of the program. These are equivalent to corresponding disciplines / course elements at other institutions providing education.

6.1.2 Credit in connection with enrollment at another Danish or foreign higher training after the Constructing Architect program is passed

You can get help for this from your student counsellor.

7 Foreign language

On the 1st and 2nd semester students can choose between two languages - English and German. This training is compulsory and is included in the core area "General".

Since the department also has an international line, it is also possible that Danish students can choose to take completely or parts of the program in English.

8 Transitional arrangements

There are currently no transitional arrangements.

9 14 days study trip abroad

The compulsory international module in the 5th semester at the Architectural Technology and Construction Management programme at EAL

Lillebaelt Academy arranges an international course for the students during the 5th semester in connection with their elective subjects. The purpose is for the students to acquire knowledge, skills and competences with a view to act professionally and competently in the profession in a globalized world.

See appendix 1.

Date:

27/10-16



Jens Mejer Pedersen
Rector

Appendix 1

14 days study trip abroad

The compulsory international module in the 5th semester at the Architectural Technology and Construction Management programme at EAL

Lillebaelt Academy arranges an international course for the students in the 5th semester in connection with their elective subjects. The purpose is for the students to acquire knowledge, skills and competences with a view to act professionally and competently in the profession in a globalized world.

In connection with completing the elective subjects, a 14 days (10 work days) study trip abroad is arranged. The study trip is compulsory and the student must be active in the participation of the professional elements during the trip and must be approved in the hand in that follows in order to pass the 5th semester.

Ministry of Education and Research:

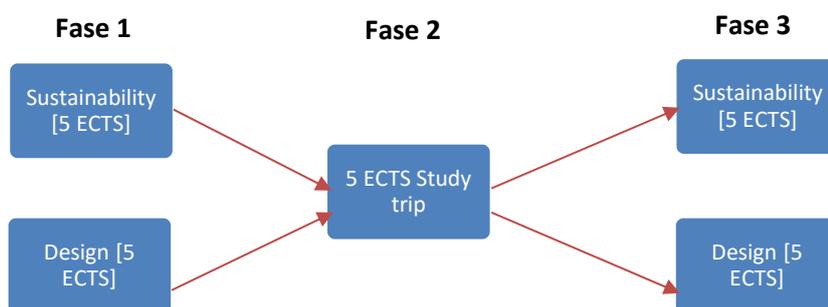
"INCREASED INSIGHT THROUGH GLOBAL VISION – more students on study trips abroad strengthened international learning environments and better foreign languages competences." <http://www.ufm.dk>

Students in the 5th semester is currently participating in a study trip based on the elective subjects Sustainability and Design and the international module is placed in the cities Hamburg and Berlin.

In the future, the existing experience will form the basis of the development of the new international course. Here the students will enter into cooperation with other students at e.g. HafenCity Universität in Hamburg and Hasson Plattner Institute in Berlin. At the same time, there will be excursions with guided tours at different interesting focus areas for each elective subject such as drafting rooms and construction sites. Later on, other destinations and cooperative partners may be added to the programme.

ECTS points

The elective subjects in the future international course is divided into 3 phases which are illustrated in the model below:



1. Introduction to the theory and method of the subject so that the students are prepared for the professional contents and assignments of the study trip.
2. The study trip. The students will have the possibility to cooperate internationally with students and the construction industry in practice.
3. Handing in documentation for fulfilling the learning goals of the course in which theory and practice for the elective subjects are accounted for.

Costs for the student

Students must expect costs for up to 7.200 DKr. excl. allowance (2014 DKr.) for the travel, hotel and participation.

This corresponds to 300 DKr. per month during the 1st – 5th semester. These costs are paid on the 1st in each month. The students themselves are in charge of administering the money in all of the semesters.

If the student cannot participate in the study trip due to special circumstances, the student must apply for dispensation. The application must be handed in to the Head of Department in writing 2 months ahead of the study trip at the latest. The student will be assigned with another assignment during the same term as the study trip.