

# SEMESTER SYLLABUS

## SEMESTER 5

**Semester theme: Renovation  
Specialization : Architectural Tech-  
nology**

Bachelor's Degree Programme in Architectural Technology and Construction Management

VIA University College

Revised February 2019

# CONTENTS

---

<b>1</b>	<b>THE SEMESTER</b>	<b>4</b>
<b>1.1</b>	<b>Admission requirements</b>	<b>4</b>
<b>1.2</b>	<b>Study activity</b>	<b>4</b>
<b>1.3</b>	<b>Quality assurance</b>	<b>5</b>
1.3.1	Local student council	6
<b>1.4</b>	<b>Project work</b>	<b>6</b>
1.4.1	Subject-focused teaching	6
1.4.1.1	Building Design (BDS)	7
1.4.1.2	Structural Design (STD)	8
1.4.1.3	Building Services (BSE)	8
1.4.1.4	Building Planning and Management (BPM)	8
1.4.1.5	Law (LAW)	8
1.4.2	Other study components (local subject components)	9
<b>1.5</b>	<b>Local subject components</b>	<b>9</b>
1.5.1	Elective programme component (EPC, 10 ECTS credits)	9
1.5.2	Local programme component (LPC, 5 ECTS credits)	9
1.5.2.1	Build 4.0	10
1.5.2.2	Sustainable Building	10
1.5.2.3	Energy	10
<b>1.6</b>	<b>Examinations and evaluations</b>	<b>10</b>
1.6.1	Assessment of the compulsory programme component	11
1.6.2	Assessment of the elective programme component	11
1.6.3	Assessment of the local programme component	11
<hr/>		
<b>2</b>	<b>THE TEACHING</b>	<b>12</b>
<b>2.1</b>	<b>Indicative timetable</b>	<b>12</b>
<b>2.2</b>	<b>Reading list and knowledge base</b>	<b>12</b>
2.2.1	Additional subject-specific sources	12
<hr/>		
<b>3</b>	<b>Annex</b>	<b>13</b>
<b>3.1</b>	<b>Overview of learning objectives supported by subject teaching</b>	<b>13</b>
<b>3.2</b>	<b>Additional subject-specific sources</b>	<b>15</b>

# Welcome to Semester 5 with the accent on Architectural Technology!

You are now about to start the final semester in the learning environment we call 'Professionalization'; this is also the last semester to be primarily teacher-led.

You should be considering whether there are areas in which you will have to make a special effort to improve your skills before you go on placement, work on local subject components, do your Bachelor's project and, ultimately, venture out into the labour market.

The theme of the semester project is 'Renovation'.

In the project work, you and your group will learn about the special requirements associated with preliminary studies and the recording, set-up, structures, materials and conversion planning of existing buildings. The semester's national subject component carries 15 ECTS credits and includes the following subject areas: Production (5 credits) and Structural Design (10 credits).

This semester also includes two local subject components requiring you to work on elective topics. Your work must follow the science-theory-based method to which you were introduced earlier in the programme.

You must describe a specific problem within building renovation and conversion, which you will investigate and propose one or more solutions to.

The local subject components make up 15 of the semester's 30 ECTS credits, and they include:

- the elective study component (EPC), developed as a continuation of the compulsory study component and worth 10 ECTS credits;
- the local study component (LPC), developed in connection with the compulsory study component and worth 5 ECTS credits.

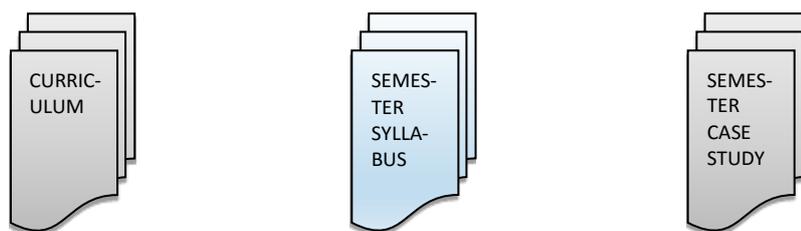
These, then, give you a lot of scope to target your education according to what you want to do afterwards.

In the course of this semester, you need to decide where you will go on placement in Semester 6.

## Recommended reading

As guidance to you and others on the different semesters of the programme, a syllabus like this one has been prepared for each semester.

Figure 1: Document hierarchy



Source: prepared at VIA Built Environment

Each semester syllabus consists of two main sections:

**1. The Semester**, which is introduced with a description of the overall structure of the semester, followed by a brief description of the prerequisites we need you to have in place in order to start the semester. The content of the semester is then described in more detail: the *interdisciplinary project*, including subjects and other study components, and the *local subject components*.

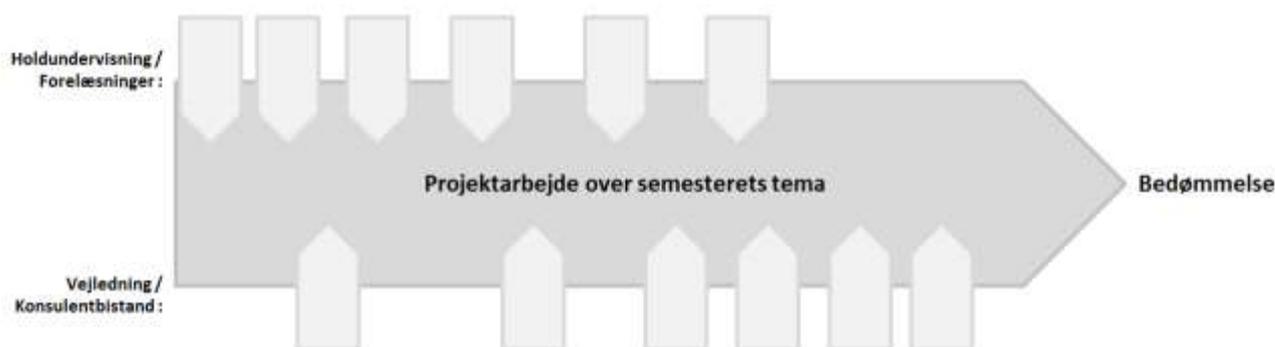
**2. The Teaching:** the semester team’s description of their particular semester case study and teaching plan, and a reading list. They have designed these to enable you to attain the learning objectives set.

# 1 THE SEMESTER

In this semester, you will mainly be working on one continuing project within the overall theme of the semester. As shown in Figure 2, each subject will be directed towards the project.

Theoretical presentations by the teaching staff are often mostly concentrated at the beginning of the course; later on, the teachers will mainly assist with guidance/consultancy relating to the project. It is through the process of working towards the solution of problems that you, the student, will develop your competency as an architectural technologist.

Figure 2: Interdisciplinary project work



Class teaching/lectures:		
	Project work on the theme of the semester	Assessment
Guidance/consultancy:		

Source: prepared at VIA Built Environment

In this semester, the local subject components will give you the opportunity to tailor your education. The elective programme components are independently organized courses of study.

## 1.1 Admission requirements

In order to enrol on Semester 5, you must have been entered for the Semester 4 examination or otherwise gained approved credit.

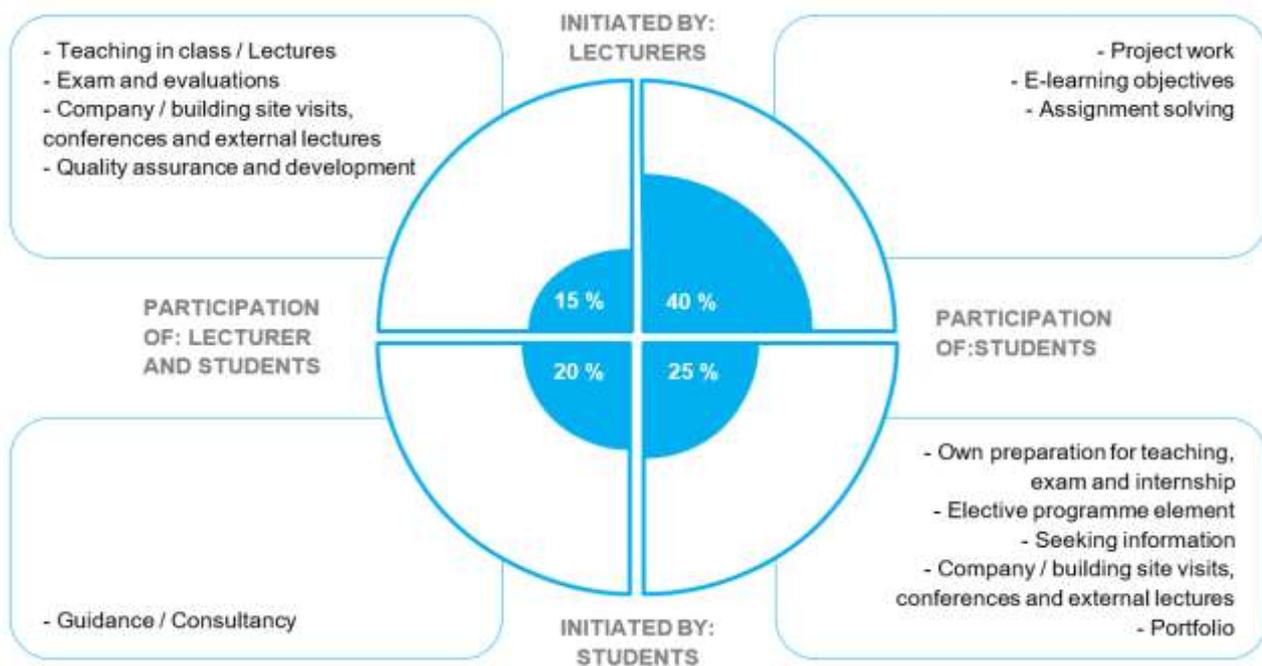
## 1.2 Study activity

The teaching and working formats used in this semester are shown in the Study Activity Model for the semester.

The Study Activity Model indicates that we expect you, the student, to spend approximately 825 hours studying in each semester, and also that there are a variety of teaching and working formats, indicating that not all learning is initiated by the teaching staff and/or has a teacher present. This means that you, the student, also bear considerable responsibility for your own learning.

Thus, the Study Activity Model also shows what we expect of you as a student and what you can expect of us as regards your attainment of the learning objectives.

Figure 3: The semester’s Study Activity Model



Source: prepared at VIA Built Environment

The Portfolio is an important tool on the programme, and you should use it to reflect on your own learning.

### 1.3 Quality assurance

You and your fellow students play a vital role in the quality assurance and quality development of the programme. It is important for management and teaching staff to receive your feedback so that, together, we can both ensure that you and your fellow students obtain a high level of educational benefit, and create the conditions for a satisfactory teaching and learning environment.

The table below shows how you as students will be involved in the evaluation of teaching activities during Semester 5, who will be the main users of your feedback, and when the evaluation will be carried out.

**Table 1: Student involvement in teaching evaluation during the semester**

Element	Method	Main users	When held
Expectation adjustment at the start of a new course of instruction at the institution	Dialogue, based on the semester syllabus, at the introductory session of the semester	Teachers and students	At the start of each semester
Halfway evaluation of course of instruction at the institution	Method chosen by teaching team	Teaching team	Approx. halfway through semester, as shown in indicative timetable
Final evaluation of course of instruction at the institution	Online questionnaire	Programme management and teaching team	Each semester to undergo final evaluation once in every three times it is taught. If due to be held, will be shown in indicative timetable.
Ongoing dialogue	Dialogue between teachers, students and programme managers, e.g. day-to-day or via the local campus/programme student council	Teachers and students	Ongoing

Final evaluation of placement in Denmark and abroad	Online questionnaire aimed at all placement venues	Programme management, International Office and placement coordinators	Placement venue final evaluation to be carried out after each placement period
Quality assurance, including final evaluation of study visit abroad	Online questionnaire etc.	Programme management and International Office	At the end of each study visit abroad
Student satisfaction survey	Online questionnaire	Programme management and VIA senior management	Every 2 years. If due to be held, will be shown in indicative timetable.

Source: prepared at VIA Built Environment

You can see results, KPIs and action plans for yourself at [Studienet \(Aarhus\)](#), [Studienet \(Horsens\)](#) or [Studienet \(Holstebro\)](#).

Here, you will also find further information on the work VIA University College does around quality. The results of current evaluations are presented at the semester introductory session. Your class representatives also play a vital role in communicating what is discussed at campus/programme student council meetings.

### 1.3.1 Local student council

At VIA, there is one combined Student Council per campus with class representatives from all study programmes, but the individual programmes also have local student councils.

The VIA Built Environment management teams at Horsens, Aarhus and Holstebro continually involve the local student council in discussions about the quality assurance and quality development of the programme, including:

- employer involvement,
- graduate involvement,
- final evaluation of teaching,
- final evaluation of placements in Denmark and abroad,
- final evaluation of study visits abroad,
- student satisfaction survey,
- dropout analysis.

## 1.4 Project work

Project work consists partly of assignments to be tackled individually and partly of assignments to be tackled in groups of 2-4 students.

The reason for working in groups is partly that this is a very widely used working style in the building sector, and partly that there is learning value in problem-focused collaboration on a specific project with other students who have different experience and skills.

Although students work in groups, it is nevertheless important that you as a student can independently acquire and apply the knowledge you gain from the different subjects.

### 1.4.1 Subject-focused teaching

Single-subject teaching covers rules, theories, methods and techniques within each specific subject area. When the individual topics are taught will be set out in detail in the team's teaching plans, which will be

made available on It's Learning. Examples of specialist interpretations of the Semester 5 learning objectives for the individual subjects are listed in Annex 3.1.

Table 2 shows the areas each subject is divided into. The subject areas are described separately in the subsections to follow.

**Table 2: Subjects, subject areas and subject distribution**

Subject	Subject areas	Distribution
Building Design (BDS)	Architecture and Building Design (BDS/ABD) Building Construction (BDS/BCN) Materials Science (BDS/MAT)	47%
Structural Design (STD)	Structural Design (STD)	10%
Building Services (BSE)	Building Services (BSE)	10%
Building Planning and Management (BPM)	Building Planning and Management (BPM)	20%
Law (LAW)	Law (LAW)	13%

Source: prepared at VIA Built Environment

### 1.4.1.1 Building Design (BDS)

The subject presentations under BDS will support attainment of the learning objectives for the semester, alone and in interdisciplinarity with content under other subject groups. Teaching will be based on the following content:

#### Building Design ABD

- Introduction to the history of styles, 1850–1980;
- Building renovation and energy improvements in a sustainable and architectural perspective.

#### Building Design BCN

- building recording;
- sketching and structural design with Revit, statutory requirements, project scrutiny, layout of structures and installations, construction technology in a renovation project;
- typical structural configurations in renovation projects;
- structural issues in post-insulation;
- roof structures in renovation projects, incl. dormers;
- wetrooms;
- steel structures as primary building fabric components in extensions;
- lightweight structural floors and walls, primarily with profiled sheeting frames, in extensions;
- Analogue and digital tools for sketching and describing buildings (see 'ICT and BIM on the ATCM Programme' in the reading list).

Structural design within:

- project proposal and regulatory project in accordance with current Description of Services for Building and Landscape.

#### Building Design MAT:

- knowledge searching, analysis and documentation of materials choices in the subject area in relation to the theme of the semester;
- preparation of the content journal;
- preparation of material specification on drawings linked to BIM.

#### **1.4.1.2 Structural Design (STD)**

The subject presentations under STD will support attainment of the learning objectives for the semester, alone and together with content under other subject groups. Teaching will be based on the following content:

- load determinations;
- static analysis of buildings: existing, future and under construction;
- table-based dimensioning;
- estimation of steel columns, beams and steel joints;
- bracing of buildings during conversion;
- imposts on masonry and replacement of masonry;
- steel structures as building components;
- foundation reinforcement.

#### **1.4.1.3 Building Services (BSE)**

The subject presentations under BSE will support attainment of the learning objectives for the semester, alone and together with content under other subject groups. Teaching will be based on the following content:

- sound analysis;
- analysis of current Building Code requirements for U-value and linear thermal transmittance, and energy consumption in renovation and extension of older properties;
- analysis of the use of renewable energy sources;
- heat recovery ventilation systems;
- service ducts, plant rooms and shafts/cores in older properties.

#### **1.4.1.4 Building Planning and Management (BPM)**

The subject presentations under BPM will support attainment of the learning objectives for the semester, alone and together with content under other subject groups. Teaching will be based on the following content:

- planning tools;
- budgeting of building costs;
- quantity take-off: principles and methodology;
- pricing of building structures;
- logging of building components and materials;
- construction phases and services.

#### **1.4.1.5 Law (LAW)**

The subject presentations under LAW will support attainment of the learning objectives for the semester, alone and together with content under other subject groups. Teaching will be based on the following content:

- ABR (General Conditions for Consulting Services), particularly the preparation of a consultancy agreement;
- AB (General Conditions for Provision of Works and Supplies), particularly the preparation of a Building Project Description;
- contractual damages;
- the Executive Order on Winter Measures;
- public procurement law in relation to the semester case study, including the Client/Consultant and Client/Contractor relationships;
- the regulations on authority;
- the Statutory Limitation Act (Forældelsesloven);
- the ILO conventions generally;
- recourse to court, arbitration and Procurement Board practice;
- the Client/Consultant, Consultant/Subconsultant and Client/Contractor relationships;

## 1.4.2 Other study components (local subject components)

During the semester, the semester team may arrange other study components, in consultation with the students if appropriate. This will then appear on the timetable or the schedule planner for the particular class.

## 1.5 Local subject components

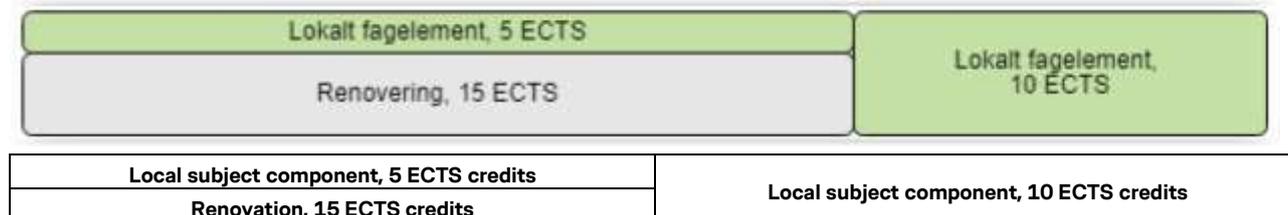
A local subject component is defined as either a local programme component (LPC) or an elective programme component (EPC).

The local subject components in Semester 5 will give you the opportunity to work on specific building technology topics or renovation problems chosen by you. They will cover a problem or topic arising out of the compulsory renovation/conversion project.

The aim is that you will extend your knowledge and competencies within the chosen area, and enhance your methodological and analytical skills and building technology competencies.

The figure below shows how the LPC and EPC stand in relation to the compulsory part.

Figure 4: ECTS distribution – national subject components and elective programme components



Source: Curriculum

As part of the elective programme component, you can take part in a study trip/university collaboration at one of VIA University College's partners abroad. Another possibility in the elective is an interdisciplinary collaboration with external partners, e.g. a collaboration with other programmes or with employers. For planning reasons, this choice must be made in Semester 4.

### 1.5.1 Elective programme component (EPC, 10 ECTS credits)

In order to strengthen collaboration between students and ensure the best possible tuition and consultancy support for the elective, the College has defined different types of **course of study**:

- structural design
- special interprofessional course

The learning objectives and content of the courses of study are described in detail in the institutional part of the curriculum, under Section 3.1, Elective Programme Components, EPC (3.1.3, Elective Programme Component, Semester 5).

The elective consists of individual study. There is the option of working in a group on the elective, but here it is important that there is a clear definition of your personal part of the assignment, as it is important from the point of view of the examination that your ability to work independently at a professional level can be assessed.

### 1.5.2 Local programme component (LPC, 5 ECTS credits)

The student must bring to the elective programme component the knowledge gained from the programme's subject areas.

In Semester 5, the student must take one local programme component (LPC). Figure 4 shows when in the semester it is taught. The student chooses one of three possible LPC topics: Build 4.0, Sustainable Building or Energy. Content and learning objectives are described in detail in the institutional part of the curriculum under Sections 3.2.1, 3.2.2 and 3.2.3.

In addition, you will be given an introduction to the LPC components by the tutors for the semester.

### 1.5.2.1 Build 4.0

This is the student's opportunity to gain an educational specialization in the tools and methods associated with Build 4.0 in construction management.

### 1.5.2.2 Sustainable Building

The student will gain a deeper understanding of sustainability both as a concept and as regards its significance for the specific building project. It also aims to make the student aware of the challenges of the phenomenon from the point of view of conversion and development.

### 1.5.2.3 Energy

The student will gain a deeper understanding of active and/or passive energy measures both as a concept and as regards their significance for the specific building project.

## 1.6 Examinations and evaluations

There are 3 examinations during Semester 5. The material to be examined is described in the institutional part of the curriculum under Section 3.7.

You and your group will present the semester project and then receive an individual mark based partly on what you have done as a group and partly on your independent part of the project.

Significant parts of the project must be presented digitally/orally, with an oral evaluation by the teachers to follow.

As this is the last semester before the company placement, considerable weight is attached to independence in the tackling of the assignment, including the ability to work methodically, analytically and professionally when searching for relevant information.

Please see the [current guidance](#) for information on the conduct of the concluding examination as regards the use of digital presentation.

Table 3 is an overview showing the various study components and their assessment in accordance with Section 3.7 of the Curriculum.

**Table 3: Study components and their assessment**

Examination	Material examined	Assessed at end of study component?
Examination 7	Project work on Renovation	X
Examination 8	Presentation of synopsis or problem statement and participation in the semester's project work	X
Examination 9	Project material from Elective 3	X

Source: prepared at VIA Built Environment

General information on examinations is available on Studienet: [\(Aarhus\)](#), [\(Horsens\)](#) & [\(Holstebro\)](#)

### **1.6.1 Assessment of the compulsory programme component**

Assessment is based on the following criteria:

- method and work process (knowledge, skills, competency);
- technical solutions and documentation (knowledge, skills, competency);
- oral presentation and defence (knowledge, skills, competency).

### **1.6.2 Assessment of the elective programme component**

Assessment is based on the following criteria:

- method and work process (knowledge, skills, competency);
- technical solutions and documentation (knowledge, skills, competency);
- oral presentation and defence (knowledge, skills, competency).

### **1.6.3 Assessment of the local programme component**

Assessment is based on the following criteria:

- method and work process (knowledge, skills, competency);
- technical solutions and documentation (knowledge, skills, competency);
- oral presentation and defence (knowledge, skills, competency).

---

## **2 THE TEACHING**

Please see the class area on It's Learning, where the semester case study, the timetable, information on the semester project and the teaching matrix/plan will be uploaded.

### **2.1 Indicative timetable**

The semester timetable will be reviewed at the beginning of the semester.  
The indicative timetable will then be available in the class folder on IT's Learning.

### **2.2 Reading list and knowledge base**

#### **2.2.1 Additional subject-specific sources**

Additions to the reading list and knowledge base are listed in Annex 3.3.

---

## 3 Annex

The annex represents a subject-specific interpretation of the Semester 5 learning objectives. In Semester 5, you as a student have now reached a point in your education where you are working professionally on your own learning, and hence on the pre-requisites for gaining knowledge, skills and competencies. Studying in Semester 5 means constantly moving into new discipline areas and going beyond those that are already known. The theme for Semester 5, Renovation, is the most difficult discipline the architectural technologist has to deal with.

To help you find your way around this new subject area, below is an example of a subject-based interpretation of the learning objectives based on the end goals of the semester. This interpretation should give you an understanding of what is expected and how the subject teaching relates to the national subject components of the curriculum (Production and Structural Design).

### 3.1 Overview of learning objectives supported by subject teaching

#### Building Design (BDS)

Examples of learning objectives supported by BDS content:

##### Building Design ABD

Knowledge of:

- the history of older multi-storey residential buildings;
- the methods and practice of the discipline in relation to renovation of multi-storey residential buildings constructed in the period 1850–1980 approx.;
- the history of construction and different approaches to renovation, locally and internationally
- the effect of sustainability and energy improvements on existing architecture and future design.

Skills:

- design building improvements with due regard and respect for existing architecture and design.

##### Building Design BCN

Knowledge of:

- the principles and possible applications of methods and techniques for planning, designing and executing the structural design phases in renovation of older buildings, with particular emphasis on improvement of energy conditions through sustainable renovation/extension;
- the building physics issues, structures and details of older multi-storey buildings;
- the complex of legislation, literature, recommendations etc that is the commonly accepted technical basis for renovation and conversion projects in Denmark;
- sustainability in relation to economic, social and environmental considerations, including certification schemes.

Skills:

- be proficient in work methodologies for preparing the requisite material in the structural design phases;
- develop sketching technique and visualization and communication skills, including the use of ICT tools.

##### Building Design MAT:

Knowledge of:

- the use of building materials in the renovation of buildings;
- environmentally harmful substances in building materials;
- the composition, properties, processing, standards requirements, environmental impact, working environment, protection, trading, structural conditions, reuse, maintenance, life cycle evaluation etc of these materials:
  - timber,
  - masonry,
  - concrete,

- steel/metal, corrosion and corrosion protection,
- roofing materials,
- sheet materials.

**Skills:**

- analyse, select and incorporate building materials;
- justify and document choices of materials.

**Structural Design (STD)**

Examples of learning objectives supported by STD content:

**Knowledge of:**

- important structures giving cohesive stability in the structures in the existing building and any extensions;
- table-based dimensioning and joining methods for extensions and structures, columns, beams and joints;
- bracing methods in renovation of an existing building, including possible underpinning.

**Skills:**

- understand and account for existing static systems;
- account for the structural connections between existing building systems and any new ones in connection with major construction interventions;
- structures, e.g. steel columns and beams;
- give an account of execution in connection with the design and planning of interventions in existing buildings;
- give an account of and propose relevant loads on the building as a whole;
- incorporate industrial building components as part of the statics in the building;
- communicate static analyses orally, in writing and graphically, and put the case for the choice made;
- input relevant properties relating to static condition requirements to the BIM model, and perform drawing exports from the model showing these properties;
- carry out collision and consistency control on drawing exports.

**Building Services (BSE)**

Examples of learning objectives supported by BSE content:

**Knowledge of:**

- building services in older properties, including ducts and materials; principles of water, heating, drainage and sewerage;
- mechanical/balanced heat recovery ventilation in older properties;
- sound conditions and possible improvements to them in older properties
- energy optimization methods for older properties and extensions, including use of renewable energy sources.

**Skills:**

- propose improvements to sound conditions in older properties;
- select the most suitable ventilation system for older properties and extensions, ensuring sufficient space for its components;
- determine ducting routes for water, heating, ventilation and drainage pipes taking space, fire safety and sound conditions into account;
- calculate the heat loss framework for an extension;
- calculate the profitability of an energy improvement measure as part of renovation in accordance with the current Building Code;
- document the project's compliance with Renovation Class 2;
- analyse possible use of alternative energy sources and document some of the energy-related, pollution-related, financial or other consequences.

**Building Planning and Management (BPM)**

Examples of learning objectives supported by BPM content:

**Knowledge of:**

- the overall political, legal, administrative and economic contexts of urban renewal in Denmark;
- The Health and Safety Plan (HSP) in relation to the phases of the semester;
- the principles and possible uses of the planning and management methods and the options for integration of the BIM model with digital calculation and management tools.

#### Skills:

- organizational structure, types of contract and forms of collaboration, including project management;
- engage in professional and interdisciplinary teamwork, documented through methodology and working procedure;
- give an outline of relevant management practices and organizational structures;
- translate requirements from the Danish Association of Architectural Firms (DANSKE ARK)/Danish Association of Consulting Engineers (FRI) Description of Services to planning of the structural design work;
- design renovation within the framework applicable to urban renewal;
- carry out systematic data collection for preparation of documented descriptions in relation to the case study;
- take off quantities in student's own renovation project and use them for calculation;
- understand and carry out overall network planning for the project;
- appoint a safety coordinator;
- draw up a procurement schedule.

#### Law (LAW)

Examples of learning objectives supported by LAW content:

Knowledge of:

- contractual damages (focusing on the AB (General Conditions) system);
- cessation of liability, including claims and time-barring.

#### Skills:

- give an account of the equal treatment and transparency provisions in the public procurement regulations and of the significance of the tender procedure selected in the case study, and
- draw up a consultancy agreement with reference to and perhaps deviations from the General Conditions for Consulting Services (ABR), and give an account of the responsibilities and authority of the consultant;
- draw up the contractual basis of the Building Project Description on the basis of the General Conditions for Provision of Works and Supplies (AB), and account for any derogations/amplification, particularly in the areas of defects, time/delays and payment (top-up to Semester 3) and extra work, handover and cessation of liability.

## 3.2 Additional subject-specific sources

#### Interdisciplinary sources

- [ICT and BIM](#)
- [List of textbooks and readers](#)

#### Building Design (ABD/BCN/MAT)

- See indicative list of textbooks and readers
- Danish architecture since 1754, The Danish Architecture Press
- Guide to Danish Architecture 1, 1000 – 1960
- Danmarks arkitektur, Byens huse, Byens plan (The Architecture of Denmark: City Houses, City Plan). Gyldendal
- Analyzing ARCHITECTURE, Simon Unwin, ROUTLEDGE
- Danish Architecture, Tobias Faber, Det Danske selskab
- [www.bygningskultur.dk](http://www.bygningskultur.dk)
- [www.danskebygningmodeller.dk](http://www.danskebygningmodeller.dk)

- <http://www.historiskehuse.dk>
- Current Building Code and associated recommendation
- SBI recommendations
- Byg Erfa ('Building Experience')
- Træinformation (Timber Information Council) – the Timber Handbooks
- BIPS standards (particularly drawing standards)
  
- Gode tage (Good Roofs) – BvB (Building Defects Fund for Building Renewal)
- Gode Vådtrum (Good Wetrooms) – BvB
- BvB recommendations and associated literature and guides (etc.)
- Multi-Storey Residential Building in Copenhagen 1850–1900 – SBI report 142
- BPS publications 100 / 101 / 116 / 119
- On the Fire-Proofing of Buildings (historical material)
- SBI recommendation 104 Corrosion Prevention in Residential Building Structures (out of print)
- BPS publications (100, Foundations and Cellars; 101, External Walls, 116, Internal Building Components; 119 Renovation of Multi-Storey Properties for the Elderly and Disabled)
- Choosing underlay material [www.duko.dk](http://www.duko.dk)

### ICT (BDS/ICT)

- Digital Construction
- Bips.dk
- Students.autodesk.com

### Building Planning and Management (BPM)

- Current Description of Services
- Current ABR and AB
- Description tool from BIPS
- <http://bk-guide.dk/dk/> (VIA Logbook. Overview of the building process for contractors)
- <http://www.vaerdibyg.dk/>
- <https://arbejdstilsynet.dk/da/>
- [www.haandbogen.info/da/forside](http://www.haandbogen.info/da/forside)
- [www.danskyggeri.dk](http://www.danskyggeri.dk)
- [www.byggeproces.dk](http://www.byggeproces.dk)

### Static Design and Understanding (STD)

- Teknisk Ståbi (Technical Vade Mecum)
- Dimensionering med tabeller (Table-Based Dimensioning) (Knud Ahler)
- Eurocode 0 (DS/EN 1990) with associated Danish annex
- Eurocode 1 (DS/EN 1991) with associated Danish annex
- Eurocode 2 (DS/EN 1992) with associated Danish annex
- Eurocode 3 (DS/EN 1993) with associated Danish annex
- Eurocode 5 (DS/EN 1995) with associated Danish annex

### Building Services (BSE)

- Current Building Code
- SBI Recommendation 272, Recommendation on the Building Code 2018 - BR18
- SBI Recommendation 213, Energy Requirements of Buildings: Calculation Guide
- The Building Code's collection of examples on energy (<https://eksempelsamling.bygningsreglementet.dk/eksempelsamling-energi/0/51>)
- Knowledge Centre on Energy Savings in Buildings: The Energy Requirements in BR18 – Quick Guide
- Enterprise and Housing Agency: Let facade- og etagedæksystem til renovering (Lightweight Façade and Suspended Floor System for Renovation)
- Aarhus School of Engineering: Ombygning og bygningsrenovering (Conversion and Building Renovation)
- Jesper Engelmark: Etagebyggeriet gennem 150 år (150 Years of Multi-Storey Building)
- BPS Publication 115, Renovation of Multi-Storey Properties: Installations
- SBI Recommendation 237, Sound Insulation Between Dwellings: New Build

- SBI Recommendation 243, Sound Insulation Between Dwellings: Existing Buildings
- SBI Recommendation 244, Sound Insulation of the Building Envelope
- SBI Recommendation 245, Sound Insulation in Buildings: Theory and Evaluation
- DS 490, Sound Classification of Dwellings
- SBI Recommendation 252, Wetrooms
- SBI Recommendation 221, Post-Insulation of Multi-Storey Residential Buildings
- SBI Recommendation 224, Moisture in Buildings
- BYG-ERFA 09 10 29, Internal Post-Insulation of older external masonry walls
- Knowledge Centre on Energy Savings in Buildings: Internal Post-Insulation of Solid Masonry Walls
- BvB Building Defects Fund for Building Renewal: Topic Booklet, External Insulation and Slate Roofs
- Energy and Environment Association: Energihåndbogen (The Energy Handbook)
- DS 418, Calculation of Heat Loss from Buildings, 7<sup>th</sup> edition 2011
- DS 447, Ventilation for Buildings, 2013
- DS 432, Code of Practice for Sanitary Drainage: Wastewater Installations
- <http://www.kloakviden.dk/>
- SBI Recommendations 255, 256 and 257, Wastewater Installations
- Sewerage Reader for Architectural Technologists, VIA 17 June 2013 – ETS
- DS 428, Code of Practice for Technical Measures for Fire Protection of Ventilation Systems, 4th ed. 2011
- Choosing a Ventilation System in Use Classes 4, 5 and 6, VIA, 8 August 2016 23 August 2018 - PCSS
- Ventilation Reader for Architectural Technologists. VIA 2nd edition July 2017 – PCSS
- Knowledge Centre on Energy Savings in Buildings: Guide to Heat Recovery Ventilation in Existing Multi-Storey Properties
- COWI et.al.: Erfaringer fra prøvelejlighed Rymsgade 30C 1tv (Learnings from the Test Apartment at Rymsgade 30C 1 Left), Interim Report, June 2011

#### **Building Services (BSE/ICT)**

- BIPS Drawing Standards, Part 5, Plumbing & Ventilation

#### **Law (LAW)**

- Mogens Hansen et. al.: AB 92/AB 18 for praktikere (AB 92/AB 18 Common Conditions for Practitioners)
- Competition Authority recommendations on the public procurement regulations: [kfst.dk](http://kfst.dk)
- Teacher's reading suggestions
- Current ABR, AB, Public Procurement Act, Statutory Limitation Act - all available at [www.retsinfo.dk](http://www.retsinfo.dk)
- [www.retsinfo.dk](http://www.retsinfo.dk)
- [www.klfu.dk](http://www.klfu.dk)
- [www.kfst.dk](http://www.kfst.dk)
- [www.danskbyggeri.dk](http://www.danskbyggeri.dk)