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# SEMESTER SYLLABUS 2ND SEMESTER BUILDINGS UP TO 2½ STOREYS

Bachelor of Architectural Technology and Construction Management  
AP Degree programme in Construction Technology

VIA University College Horsens

Spring 2018

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# SEMESTER SYLLABUS

## Welcome to the 2<sup>nd</sup> semester!

We hope you have had a good start here at the ATCM-programme, and that you have gotten to know your fellow students and yourself e.g. in regards to learning styles and collaboration.

We also hope that you have come to a better understanding of what this programme is all about and what your strengths and weaknesses are with respect to that.

2nd semester is still in the study environment 'learning to learn'. From the 3<sup>rd</sup> semester we continue to the study environment 'Professionalization'; the academic level increases and we will expect for you to be more independent. Hence, it is important in this semester, that you get familiar with sensible study and work habits suitable for your learning style.

During the 2<sup>nd</sup> semester, you will work with a project (alone and in a group) which is slightly more complicated than the one you worked with on the 1<sup>st</sup> semester. Thus, the requirements to your skills, knowledge and competencies are higher now.

The semester is completed with an exam with external censors. You will be evaluated individually and as part of a group.

Based on this semester and your final evaluation, it is important that you start to consider what you want to do with the rest of your education.

The first big decision you have to take is whether you wish to become an AP Graduate in Construction Technology after the 4<sup>th</sup> semester or to become a Bachelor of Architectural Technology and Construction Management after the 7<sup>th</sup> semester.

Consider what you want to work with, your economic situation and academic circumstances. If you have any doubts concerning your academic competencies or your decision regarding your education path we encourage you to talk to one of the student supervisors of this programme or one of your teachers.

## Quality assurance and development

In the following links, you can find the latest action plans, developed by the programme management based on your assessments.

Find other action plans in relation to the work with quality assurance and development of the study programme on [Studynet \(Horsens\)](#).

Join [VIA Bygningskonstruktør / Architectural Technology and Construction Management](#) on LinkedIn and become a part of a professional network with other students, graduates, teachers and employers.

## Reading guide

To guide you about the different semesters in this programme, a semester syllabus has been developed for each semester. The semester syllabus contains three main sections:

**1. The programme.** This section describes the basic approach to the pedagogy and teaching-forms, including our expectations of you in terms of achieving the learning aims. This section also describes our work with quality assurance and development of the programme and the role you play in this context.

**2. The semester.** This section starts with a brief description of the overall planning of the semester, followed by a brief specification of requirements and prerequisites for admission on the semester as well as the overall learning objectives for the semester. Subsequently, you will find a detailed description of semester content, i.e. the cross-disciplinary project, including single subjects and other elements. Finally, the main section describes how to assess the fulfillment of your learning aims, through tests and evaluations, and what criteria form the basis for the evaluation.

**3. The teaching.** This section contains a description prepared by the semester team (teachers) detailing the specific project/case and includes a teaching plan and a list of references. The project work in the specific semester is planned by the teacher team and is tailored to meet the class and to the students' background. Consequently, there will be differences in the planning and organizing of teaching in Danish versus international classes. Likewise, differences may occur in the way teaching is planned and organized at the different campuses. Such differences level out as the programme progresses.

# 1 THE PROGRAMME

The Architectural Technology and Construction Management programme is organized as a full-time education with 7 semesters, equivalent to 210 ECTS-points. The Construction Technologist Programme consists of 4 full-time semesters corresponding to 120 ECTS-points. Each ECTS-point corresponds to a workload of 27.5 hours and each semester is organized over 20 weeks, including the exam. Hence, you are expected to spend approximately 41 hours per week on your education<sup>1</sup>.

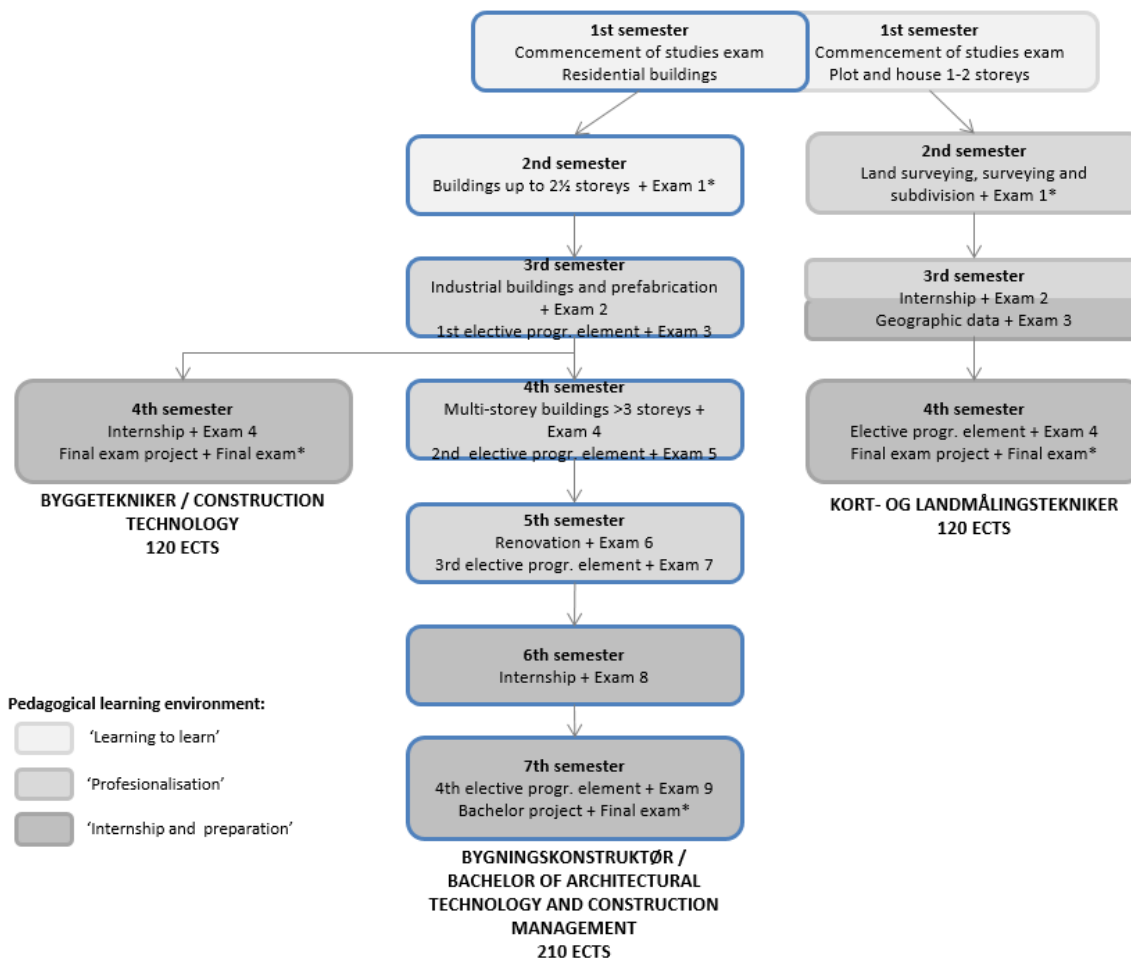
As a student, you have your own 'workplace' at the college, which we encourage you to use. The 'workplace' will change from semester to semester, depending on the size of the classes and your choice of specialization.

You also have access to resources and equipment made available to you by the campus. The type of resources and equipment may vary slightly from campus to campus.

## 1.1 The study environments

The programme is based on three different study environments, ensuring a natural progression in the learning during the course of the programme, see Figure 1:

Figure 1: The three study environments at VIA Built Environment



Source: Created at VIA Built Environment

### "Learning to learn"

<sup>1</sup> During the internship, a workload of approximately 37 hours/week is accepted.

This environment emphasises the learning of how to be a successful student – finding your own learning style and gaining good study- and work-habits. Furthermore, special emphasis is put on Portfolio as the controlling element which ensures focus on the process oriented approach.

**"Professionalization"**

This environment increases focus on the professional content of the projects. At the same time, your ability to learn yourself is enhances. This happens in relation with you learning more about advanced methods for carrying out analyses.

**"Internship and job preparation"**

Through the internship in a company of your own choice, the elective programme element and bachelor project, you are required to immerse yourself further and independently into the relation between theory and practice.

## 1.2 Teaching- and workforms

The Architectural Technology and Construction Management programme is based on Problembased Learning (PBL). That is, the turning point in each of the compulsory programme elements is one cross-disciplinary project. I the work with the project problems, the student develop and demonstrate gained knowledge, skills and competences across the academic areas of the semester.

To prepare the student as much as possible for the profession, the primary work form is group work. Other teaching and workforms are organised in relation to the project work. Theory lessons are primarily placed in the beginning of the compulsory programme element, as it is seen as general contributions within the theme of the semester.

Besides from this, the student has to seek and process anything else that might be relevant for carrying out the project.

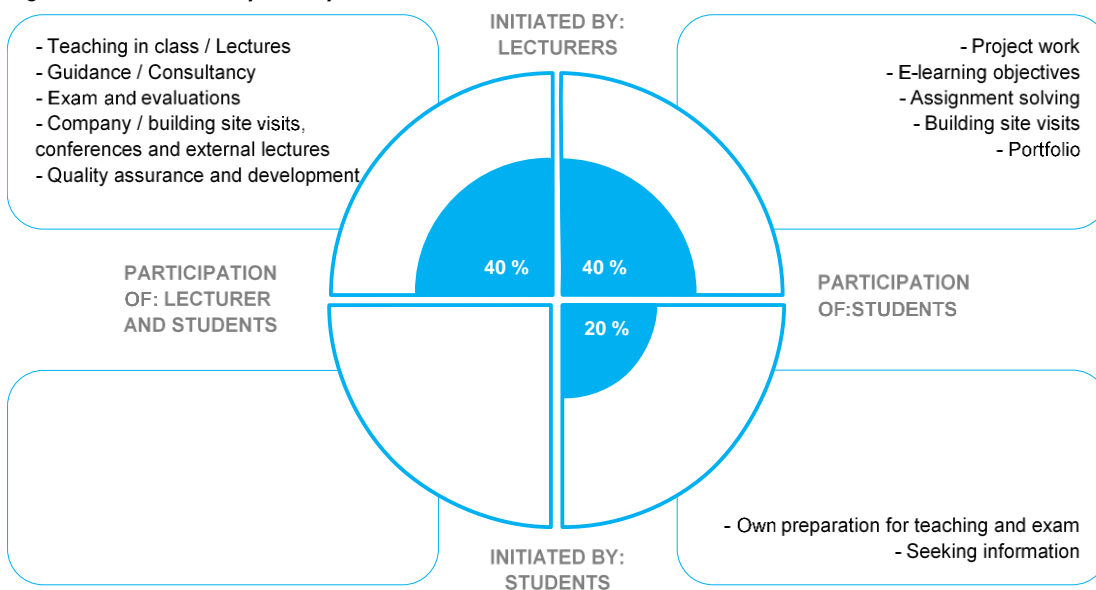
Portfolio is an important tool in the study programme, which you are to use to reflect upon your own learning.

The teaching- and workforms used in this semester are presented in the semester Study activity model.

The Study activity model clarifies partly that we expect you as a student to spent approximately 825 hours in each semester, partly that there are different types of teaching- and workforms which indicate that not all learning is initiated by a teacher and/or with the presence of a teacher. Ie., as a student you also carry a great responsibility for your own learning.

Hence the study activity model is also an illustration of what we expect from you as a student and what you can expect from us in relation to reaching the learning objectives.

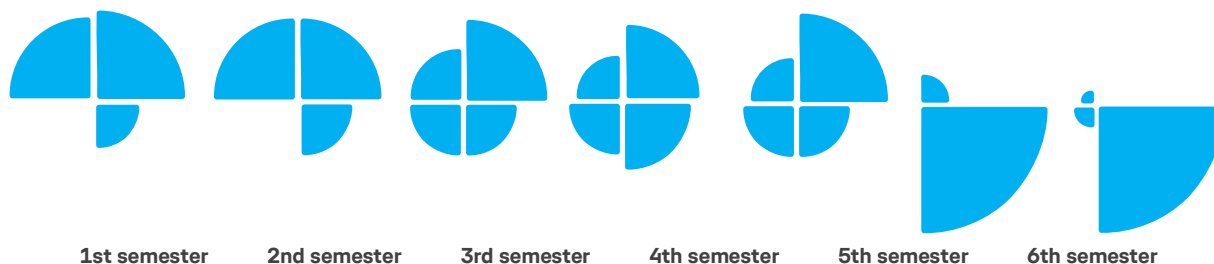
**Figure 2: Semester Study activity model**



Source: Development at VIA Built Environment

The percentage distribution of hours in the four categories is an expression of the degree of independence we expect of you as a student. If we look at the development in the semesterwise Study activity models it follows the development in the pedagogical learning environment.

Figure 3: Development in the semesterwise Study activity models



Source: Development at VIA Built Environment

All Study activity models can be found on the study programme's [website](#).

### 1.2.1 Individual learning offers

In addition to the scheduled and teacher-organized learning, you have many options of seeking new knowledge on your own. You can make use of the various offers of online teaching made available to you on 'Studynet' at this address: [www.Openvia.dk](http://www.Openvia.dk). In this database, you can find numerous instructional videos and tutorials, which may support your individual learning. You may also find material that can support you in the use of certain it-tools or material that offers repetition of specific academic topics. You are expected to make use these offers as a supplement to your own learning-process, and you are also expected to seek knowledge through other relevant services (such as the library).

In case you have additional need for special assistance during the programme, there are a number of individual possibilities at the different campuses, e.g. assistance in math, it, language or the like. The assistance may be offered in the form of short, specially organized courses or it could be assistance from a student in one of the higher semesters.

In case you have special needs in relation to your learning, it is your responsibility to make your teachers or the student counselors aware of such needs. In each case, the programme management assesses the possibilities of offering special assistance.

In order to be able to offer you optimal conditions for your studies, it is important that you inform the college about special study or learning needs that you may have.

### 1.3 Study activity / Attendance

As described in the Study Activity Model, you are expected to participate actively in classes, project work and guidance meetings. In other words, we expect that you:

- attend to class well prepared
- take part in discussions and exercises in class
- contribute positively to the group work
- procure literature, recommended by your teachers and/or counselors
- hand in compulsory assignments
- attend to meetings related to your education (status meetings, guidance meetings, evaluations, etc.) well prepared and motivated, and that you are able to document and demonstrate that you have reached the set goals

## 1.4 Quality assurance and development of the programme

We work systematically and goal-oriented with quality assurance and development of the study programmes at VIA Built Environment with regards to ensuring your learning and the content of the study programmes. This includes ensuring an updated knowledge base, the right academic level and the study programmes' relevance for the employers.

### 1.4.1 Your involvement

You and your fellow students play an important part in assuring and developing the quality of the study programme. It is important for the programme management and the teachers to get your feedback, partly to ensure that you and your fellow students gain a high learning outcome, partly to ensure a satisfactory study- and teaching environment.

From the table below, you can get an overview of how you as students are involved in evaluating the courses at and outside of VIA, who primarily uses your feedback and when the evaluations are carried out.

**Table 1: The students involvement in evaluation of the courses at and outside of VIA**

Element	Method	Primary users	Time
Alignment of expectation at the start of a new course at the institution	Dialogue at the Semester introduction with a starting point in the semester syllabus	Teachers and students	At the start of each semester.
Midterm teaching evaluation of a course at the institution	The Teacher team select a method	The teacher team	Approximately half way through the semester – is stated in the guiding time schedule.
Final teaching evaluation of a course at the institution	Online survey	The programme management and The teachers and the teacher team	Each semester is evaluated every 3rd time it is carried out. It will be stated in the guiding time schedule if the semester is to be evaluated.
Ongoing dialogue	Dialogue between the teachers, students and programme management, e.g. in the daily life or through the local DSR/KSR	Teachers and students	Continuously.
Quality assurance, incl. final evaluation of internship in Denmark and abroad	Among other things online survey	The programme management, internship coordinators and the international office	Each semester is evaluated every 3rd time it is carried out. It will be stated in the guiding time schedule if the semester is to be evaluated.
Quality assurance, incl. final evaluation of studies abroad	Among other things online survey	The programme management and the international office	By the end of each period of studies abroad.
Student satisfaction survey	Online survey	The programme management and VIAs upper management	Every 2nd year. It will be stated in the guiding time schedule if there is a Student Satisfaction survey in the given semester.

Source: Development at VIA Built Environment



You can find results, Key Performance Indicators and action plans on [Studynet \(Horsens\)](#). Results from the latest evaluations are presented at the Semester introduction. Furthermore, your class representatives play an important part in passing on the main points from the DSR-meetings.

## **1.4.2 The local DSR (Student Council)**

At VIA there is one [DSR](#) at each campus with class representatives from all the study programmes, but there is also local DSR's at the study programmes.

The programme management at VIA Built Environment in Horsens, Aarhus and Holstebro respectively continuously involve the local DSR in a discussion of the work with quality assurance and development of the programme, including:

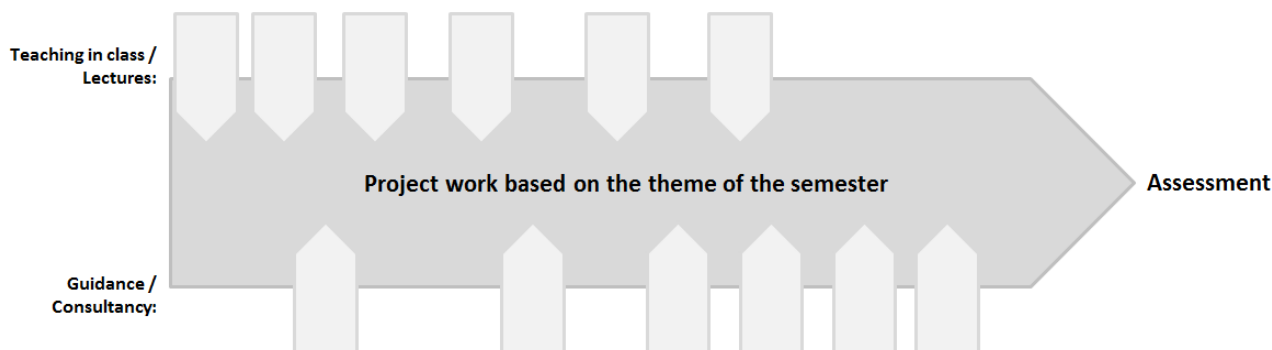
- Employer involvement
- Graduate involvement
- Final Teaching Evaluation
- Final Evaluation of the Internship in Denmark and abroad
- Final Evaluation of Study Abroad
- The Student Satisfaction Survey
- Drop-out analysis
- The Quality Report

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## 2 THE SEMESTER

During this semester, your studies will evolve around one continuous project in agreement with the overall semester theme. Figure 4 illustrates how single subject inputs support the project work. Theoretical inputs are often concentrated at the beginning of the semester, whereas guidance and consultancies in relation to the project are offered later in the semester. It is in the process towards solving problems that you demonstrate your development of competencies in order to become an AP Graduate in Construction Technology or a Bachelor of Architectural Technology and Construction Management.

Figure 4: Cross- disciplinary project work



Source: Created at VIA Built Environment

### 2.1 Entrance requirements

In order to be admitted to the 2<sup>nd</sup> semester, you must have completed the Study start test, or be able to document that you in other ways have equivalent competencies.

### 2.2 Learning aims for the 2nd semester (transcribed from the curriculum)

In this section the learning aims for the compulsory part of the semester (30 ECTS-points) are described. The learning aims are transcribed from [the curriculum](#).

#### Knowledge

At the end of the 2nd semester, you 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**

At the end of the 2nd semester you 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

## **Competencies**

At the end of the 2nd semester you 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

## **2.3 The project work**

The project work is partly carried out as individual assignments and partly as assignments that need to be solved in groups of 2-4 students.

The work is carried out in groups, partly because this work form is commonly used within the building industry, and partly because you learn a lot when you have to collaborate problem oriented on a project with other students with different experiences.

Irrespective of the group work, it is important that you as an individual are able to acquire and put into use the knowledge you have obtained during single-subject teaching.

During your work with the cross-disciplinary project in the 2<sup>nd</sup> semester, you will carry out analyses of building-technical problems and you will produce the documentation needed at a scheme design level for a single-family house in 2½ storeys (incl. a basement).

The project is designed as a BIM-model in Revit.

The project will evolve around the phases: Outline proposal, Scheme Design and Detail Design 1.

### **2.3.1 Single-subject teaching**

The single-subject teaching concerns rules, theories, methods and techniques within each specific academic field. The timely placement of each topic can be seen from the semester team own teaching plans, which will be available on Study net.

Table 2 show which single subject each main subject consists of. The topics are described separately in the following subsections.

**Table 2: Subjects and topics**

Main subject	Single subject	Duration
Building Design (BDS)	Architecture and Building Design (ABDS)	1 ECTS-point
	Building Design (BDS)	8 ECTS-points
	Material Science (BDS/MSC)	3 ECTS-points
Structural Design (STD)	Structural Design (STD)	4 ECTS-points
Building Services (BSE)	Building Services and Building Physics (BSE/BPHY)	4 ECTS-points
Building Planning and Management (BPM)	Building Planning and Management (BPM)	5 ECTS-points
Communication (COM)	Communication (COM)	5 ECTS-points
<b>Total duration of the semester:</b>		30 ECTS-points

Source: Created at VIA Built Environment

### 2.3.1.1 Building Design (BDS)

The learning aims and content of the subject is shown in the following subject boxes.

**Subject box 1: Architecture and Building Design (ABDS)**

<b>Duration</b>	1 ECTS-point
<b>Learning aims – Knowledge</b>	<p>You must gain knowledge about:</p> <ul style="list-style-type: none"> <li>- the subject in general, its methods and practice, with an emphasis on function, and sustainability</li> <li>- contemporary history of architecture in a broader context, including building styles, building technology, and cultural heritage</li> <li>- fundamental architectural guidelines regarding aesthetic settings</li> <li>- Connection between prerequisites and building design</li> <li>- sustainable architecture at a holistic level</li> </ul>
<b>Learning aims – Skills</b>	<p>You must be able to:</p> <ul style="list-style-type: none"> <li>- design the layout of a single-family house up to 2½ storeys through information retrieval and functional analysis</li> <li>- master drawing techniques at a basic professional level</li> <li>- reflect on the relation between building program and building design as well as apply this reflection in order to qualify decisions within the design process</li> </ul>
<b>Content</b>	<ul style="list-style-type: none"> <li>- architecture and building design in relation to the theme of the semester - the single-family house up to 2½ storeys</li> <li>- conceptual tools, analysis tools and visualization tools</li> <li>- sustainable architecture</li> </ul>

Source: Created at VIA Built Environment

**Subject box 2: Building Design (BDS)**

<b>Duration</b>	8 ECTS-points
<b>Learning aims – Knowledge</b>	<p>You must gain knowledge about:</p> <ul style="list-style-type: none"> <li>- the subject in general, its methods and practice in regards to the single-family house with emphasis on analyzing the building at a basic professional level. This includes knowledge about: <ul style="list-style-type: none"> <li>o functional requirements for building constructions</li> <li>o analogue and digital tools used in the design and communication of construction design</li> <li>o sustainable and environmentally-friendly constructions</li> <li>o constructional drawing and its communicative value</li> </ul> </li> </ul>

<b>Learning aims – Skills</b>	<p>You must be able to:</p> <ul style="list-style-type: none"> <li>- further develop 1<sup>st</sup> semester skills for analysis and selection of building constructions, including sustainable and environmentally-friendly constructions</li> <li>- further develop 1<sup>st</sup> semester understanding of drawings and constructions, e.g. through 2D and 3D modelling</li> <li>- perform analysis, problem solving and documentation in disposition, project proposal, pre-project and parts of the main project phase (information level 5)</li> </ul>
<b>Content</b>	<ul style="list-style-type: none"> <li>- design techniques, analysis, and problem solving</li> <li>- energy-efficient, sustainable and environmentally friendly building structures and assembly details</li> <li>- use of analogue and digital tools in sketching and communication of construction</li> </ul>

Source: Created at VIA Built Environment

**Subject box 3: Material Science (BDS/MSC)**

<b>Duration</b>	3 ECTS-points
<b>Learning aims – Knowledge</b>	<p>You must gain knowledge about:</p> <ul style="list-style-type: none"> <li>- the subject in general, its methods and practice, with an emphasis on function, energy and sustainability</li> <li>- the use of materials in relation to the theme of the semester, including common and new materials</li> <li>- the manufacture, processing and trading of materials</li> <li>- the integration of materials in structures. Function and performance of materials in relation to application: Relevant properties (eg moisture impact / weather resistance, density, insulation, acoustics, load capacity), standard requirements, chemistry, environmental impact, certification schemes, life expectancy and recycling.</li> </ul>
<b>Learning aims – Skills</b>	<p>You must be able to:</p> <ul style="list-style-type: none"> <li>- analyze, select and incorporate the building materials mentioned above</li> <li>- substantiate and document your selection of building materials</li> </ul>
<b>Content</b>	<ul style="list-style-type: none"> <li>- information retrieval, analysis and documentation within the subject in relation to the theme of the semester</li> <li>- substantiation and documentation of your selection of building materials</li> <li>- preparation of building component log/specifications</li> <li>- preparation of material specifications linked to BIM</li> <li>- visit to a building material manufacturer and a building site.</li> </ul>

Source: Created at VIA Built Environment

**2.3.1.2 Structural Design (STD)**

The learning aims and content of the subject is shown in the following subject box.

**Subject box 4: Structural Design and Mathematics (STD/MATH)**

<b>Duration</b>	4 ECTS-points
<b>Learning aims – Knowledge</b>	<p>You must gain knowledge about:</p> <ul style="list-style-type: none"> <li>- different types of load bearing structures and materials, as well as the function of these in dwellings of 2½ storeys</li> <li>- the structural system and the ability to identify this in your semester-project</li> <li>- load transferring joints and the ability to identify such joints in your semester-project</li> <li>- BIM-modelling in regards to primary structural building components</li> </ul>
<b>Learning aims – Skills</b>	<p>You must be able to:</p> <ul style="list-style-type: none"> <li>- account for the structural system in a building 2½ storeys</li> </ul>

	<ul style="list-style-type: none"> <li>- communicate the structural ways of the loads through the buildings, orally and by using sketching techniques</li> <li>- make extractions of drawing plans for illustration of the structural system</li> <li>- determine loads in your project in accordance with current Eurocode 0 and Euro-code 1</li> <li>- elaborate on structural documentation in A1 and have knowledge of parts of A2 for your semester-project, in accordance with current BR</li> <li>- make a rough calculation of columns and beams (wood and steel)</li> <li>- make a rough calculation of deck structures by the use of tabled information</li> </ul>
<b>Content</b>	<ul style="list-style-type: none"> <li>- Stress resultant curves</li> <li>- Basis of calculations and choice of construction</li> <li>- Loads and safety in accordance with Eurocode 0 and Eurocode 1 - DS-EN 1990 and 1991</li> <li>- Structural documentation in accordance with BR (and guidelines in accordance with Sbi 223 - A1+ parts of A2)</li> <li>- Load transfer</li> <li>- Load carrying and bracing system</li> <li>- Bracing and anchoring</li> <li>- Load transferring joint.</li> </ul>

Source: Created at VIA Built Environment

### 2.3.1.3 Building Services (BSE)

The learning aims and content of the subject is shown in the following subject box.

#### Subject box 5: Building Services and Building Physics (BSE/BPHY)

<b>Duration</b>	4 ECTS-points
<b>Learning aims – Knowledge</b>	<p>You must gain knowledge about:</p> <ul style="list-style-type: none"> <li>- basic information concerning supply and discharge lines</li> <li>- different types of installations – service pathways/ducts/shafts</li> <li>- alternative ways of generating energy and heating</li> <li>- mechanical ventilation</li> <li>- energy calculation using the programme current Be</li> </ul>
<b>Learning aims – Skills</b>	<p>You must be able to:</p> <ul style="list-style-type: none"> <li>- account for all typical installations and pathways/service ducts/shafts in a building 2½ storeys</li> <li>- account for alternative ways of producing energy and hot domestic water</li> <li>- account mechanical ventilation</li> <li>- calculate all types of U-values in accordance with DS 418</li> <li>- account for linear and point heat losses</li> <li>- calculate ventilation loss</li> <li>- account for different energy classes as defined in current BR and, as a minimum, insert values for the building envelope including linear, point, and ventilation losses into the calculation programme</li> </ul>
<b>Content</b>	<ul style="list-style-type: none"> <li>- Preparation of drawings showing internal installations and drain pipes, rain water pipes and waste water pipes</li> <li>- Preparation of drawings for authority approval, showing drain pipes, sewer pipe and rain water</li> <li>- Alternative energy and heating</li> <li>- Running service and supply lines into the house</li> <li>- Analyses of water and heating plans for all storeys</li> <li>- Natural and mechanical ventilation in accordance with current BR</li> <li>- Transmission areas and sizes of thermal bridges in regards to DS 418</li> <li>- Calculation of U-values manually or by the use of it-programmes</li> <li>- Energy calculation for the building envelope and calculation of ventilation loss carried out in the calculation programme current Be</li> </ul>

Source: Created at VIA Built Environment

### 2.3.1.4 Building Planning and Management (BPM)

The learning aims and content of the subject is shown in the following subject box.

Subject box 6: Building Planning and Management (BPM)

<b>Duration</b>	4 ECTS-points
<b>Learning aims – Knowledge</b>	<p>You must gain knowledge about:</p> <ul style="list-style-type: none"> <li>- cost estimation and time management throughout the design phases</li> <li>- organization regarding different contract and tender forms</li> <li>- successive calculation</li> <li>- organizational theory within classical/new models</li> <li>- calculation of building costs, including life cycle costing/operation and maintenance</li> <li>- basic elements of business operations</li> <li>- use of industry standard documents</li> <li>- construction implementation</li> <li>- basic principles for Health and Safety Plans</li> <li>- basic quality assurance (understanding of quality concept)</li> </ul>
<b>Learning aims – Skills</b>	<p>You must be able to:</p> <ul style="list-style-type: none"> <li>- use current methods for the planning and management of the design phase – with particular focus on the main theme of the semester</li> <li>- analyze and assess the implementation of construction activities and their detailed interconnection including safety for workers and weather influence</li> <li>- act internally in an organization in regards to a given contract and tender form</li> <li>- apply tender law</li> <li>- systematically embed decisions made into project documents to make knowledge sharing possible</li> <li>- systematically – and based on decisions made - control the budget throughout the design phases and, also, to duly communicate such decisions to the client</li> <li>- prepare a reasoned building site arrangement plan</li> </ul>
<b>Content</b>	<ul style="list-style-type: none"> <li>- cross-disciplinary project planning and management (group and personal planning)</li> <li>- industry – technology and economics</li> <li>- forms of contracts, agreements, and tendering</li> <li>- building component log</li> <li>- cost calculation and taking-off quantities (successive calculation)</li> <li>- quality assurance</li> <li>- network planning and execution schedule for cross-disciplinary project</li> <li>- Life cycle costing and considerations regarding life cycle costing</li> <li>- Plan for Health and Safety (checklist and considerations regarding the building site)</li> <li>- tools (MS Project and spreadsheet)</li> </ul>

Source: Created at VIA Built Environment

### 2.3.1.5 Communication (COM)

The learning aims and content of the subject is shown in the following subject box.

Subject box 7: Communication (COM)

<b>Duration</b>	5 ECTS-points
<b>Learning aims – Knowledge</b>	<p>COM progression</p> <p>You must gain knowledge about:</p> <ul style="list-style-type: none"> <li>- PBL: Problem-based Learning on a elementary theoretical level</li> <li>- methods of cooperation and learning</li> <li>- organizing meetings and the importance of having an agenda</li> <li>- the structure of the minutes and their importance for decisions in the construction industry focusing on the legal significance</li> </ul>

	<ul style="list-style-type: none"> <li>- record keeping as communication between project participants for adopted decisions</li> <li>- basic building terms and expressions in English</li> </ul>
<b>Learning aims – Skills</b>	<p>You must be able to:</p> <ul style="list-style-type: none"> <li>- present academic subjects orally and in writing</li> <li>- do an oral presentation in English</li> <li>- collect, analyze and conclude based on data when writing a report</li> <li>- write a report in collaboration with others to optimize your ability to enter a professional collaboration with other students</li> <li>- write minutes at internal meetings –documenting decisions made</li> <li>- reflect upon your own learning, including your collaboration with others</li> <li>- use relevant study techniques at a basic professional level, including arguing for academic choices</li> <li>- collaborate in English with students of another cultural and educational background than Danish</li> </ul>
<b>Content</b>	<p>Collaboration and learning:</p> <ul style="list-style-type: none"> <li>- PBL: Problem-based learning</li> <li>- portfolio, expanded</li> <li>- clarification of personal competencies at an overall level</li> <li>- group contract, expanded</li> <li>- project meetings</li> <li>- guidance meetings with consultants</li> </ul> <p>Communication:</p> <ul style="list-style-type: none"> <li>- report writing focusing on empirical data and the use of sources</li> <li>- convening meetings, preparing agendas and writing minutes - focusing on construction industry meetings</li> </ul> <p>SPR (English):</p> <ul style="list-style-type: none"> <li>- English (in relation to construction) used e.g. in an oral presentation in English or in the preparation of a part of the project</li> <li>- teamwork with constructing architect students from different cultural and language backgrounds, if possible</li> </ul>

Source: Created at VIA Built Environment

## 2.3.2 Other study elements

### 2.3.2.1 Industry and Technology

The learning aims and content of the study element is shown in the following subject box.

#### Subject box 8: Industry and Technology

<b>Duration</b>	Integrated part of the single-subject teaching
<b>Learning aims – Knowledge</b>	<p>You must gain knowledge about:</p> <ul style="list-style-type: none"> <li>- principles applied in running a business</li> <li>- the 'Tender Act', tender forms and contract forms</li> </ul>
<b>Learning aims – Skills</b>	<p>You must be able to:</p> <ul style="list-style-type: none"> <li>- do the basic construction cost calculations</li> </ul>
<b>Content</b>	<ul style="list-style-type: none"> <li>- Starting point for the tuition is a case to be worked up by groups. In addition to group work you will receive professional inputs from your lecturers on aspects related to your work.</li> <li>- Taking off and costing</li> <li>- Business budgeting</li> <li>- Running a business</li> </ul>

Source: Created at VIA Built Environment



### 2.3.2.2 International project work

The learning aims and content of the study element is shown in the following subject box.

#### Subject box 9: International project work

<b>Duration</b>	Integrated part of the single-subject teaching Introductory lecture followed by one day course together with Danish classes, if possible.
<b>Learning aims – Knowledge</b>	You must gain knowledge about: <ul style="list-style-type: none"> <li>- how cultures are defined and how your culture compares with others by researching into your own country's 'social, historical and business culture and its influence upon your education, coming profession and working culture</li> <li>- researching, defining and documenting potential international, professional collaboration with other building cultures</li> </ul>
<b>Learning aims – Skills</b>	You must be able to: <ul style="list-style-type: none"> <li>- collaborate and communicate with Danish students</li> <li>- reflect upon the personal and professional implications of working internationally including language, building cultures and procedures, traditions, life customs and etiquette and how you may modify your behavior in order to work successfully in your host culture</li> <li>- communicate the research and data you have gathered in a relevant professional manner in the form of a presentation of the results of your group's research and documentation</li> </ul>
<b>Content</b>	<ul style="list-style-type: none"> <li>- Definition and explanation of the Danish mentality and culture; how it has developed and the implications for your continuing studies and potential professional career in Denmark.</li> <li>- Participation in possible activity with an international focus</li> <li>- 'Teams' consisting of both Danish and International students, if possible, research and document collaboration with a specific country. The assignment is possibly defined by the teachers. The teams present results in English.</li> <li>- Each student documents his/her reflections in their personal 'professional' portfolio.</li> </ul>

Source: Created at VIA Built Environment

### 2.3.2.3 Building site report

The learning aims and content of the study element is shown in the following subject box.

#### Subject box 10: Building site report

<b>Duration</b>	Integrated part of the single-subject teaching
<b>Learning aims – Knowledge</b>	You must gain knowledge about: <ul style="list-style-type: none"> <li>- construction process, work methods, materials and equipment used at an existing building site</li> <li>- forms of documentation for registrations and analyses</li> <li>- the linguistic when writing a "technical report"</li> <li>- reference systems – especially "Harvard Anglia"</li> </ul>
<b>Learning aims – Skills</b>	You must be able to: <ul style="list-style-type: none"> <li>- write a report in a group</li> <li>- obtain knowledge and document and communicate it in a suitable way for "technical reports"</li> <li>- Compare theory to practice and make an academic assessment</li> </ul>
<b>Content</b>	<ul style="list-style-type: none"> <li>- Lecturer's introduction to 'professional assessment', report structure, terminology used in technical reports and the use of references.</li> <li>- The formal structure of the Building site report is presented, the linguistic in "technical reports" is discussed and the "Harvard Anglia" reference system is introduced.</li> <li>- Team collaboration: Examination and registration of workmanship and general conditions on a given building site.</li> </ul>

	<ul style="list-style-type: none"> <li>- Team collaboration on report writing: Choosing focal points, equal distribution of workload among group members when reporting on focal points.</li> <li>- Team collaboration on report layout and design.</li> </ul>
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Source: Created at VIA Built Environment

## 2.4 Tests and evaluations

At the end of the semester, a final test is carried out. You and your group present the interprofessional project. Following, you will receive an individual assessment, partly for the group work and partly for the independent part of the project.

Only in case of lacking study activity or too large shortcomings in the prerequisites you will be guided to start the semester again, or in the worst case scenario, drop out of the programme.

Table 3 is an overview of the different study elements and their evaluation before or in relation to the final test.

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

Study element	Evaluated before the final test	Evaluated in the final test
Exam 1: Project work in relation to 'Buildings up to 2½ storeys'		X
Reports	X	
Architecture assignments	X	
Industry and Technology	X	
International project work	X	
Building site report	X	
Portfolio	X	X

Source: Created at VIA Built Environment

Find general information about the exam on [Studynet \(Horsens\)](#).

### 2.4.1 Evaluation of the project

The assessment criteria are defined as:

- Method and process (knowledge, skills, competency)
- Technical solutions and documentation (knowledge, skills, competency)
- Oral presentation and defense (knowledge, skills, competency)

Essential parts of the project must be presented digitally / orally followed by oral examination by the teachers.

When digital presentation is used at the ATCM-programme in relation to evaluation / the final test, we refer to the [current guide](#).

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### 3 TEACHER TEAM SPECIFICS

#### Introduction to the 1<sup>st</sup> part of building construction assignment

The first part of your building construction assignment is based on the following description of a single-family house, which will result in your group preparing an Architect's Brief. To begin with, each of you prepare part of an Outline Proposal (plans, location plan and elevations) for another group in your own class – who will decide which one is the 'best' one. In other words, the one that your group should develop into the group's Outline Proposal.

After that, your group go on to elaborate a Scheme Design and Detail Design 1 based on the Outline Proposal.

#### The Scenario

You are working in an Architect's office and have just come back from a meeting with your Client - a young Danish family consisting of:

John: 41-year old father, working in insurance - often works from home

Jane: 40-year old mother, works in a bank - loves gardening and reading

Oliver: 13-year old boy, plays the guitar - loves Lego and computer games

Mia: 9-year old girl, does gymnastics - loves Barbie and singing

The family would like to build new, modern houses on two plots they have bought - no. 95 and no. 97 in Stensballe. They would like traditional houses made with simple structures and from natural materials such as brickwork, concrete and wood.

The houses should have a sloping roof covered with slates or roofing felt. They are, however, open to alternative solutions - like some parts of the external wall may consist of other materials – possibly wooden cladding.

When positioning the houses on the plot you have to consider the view, easy access, and the areas immediately surrounding the house. They would like some kind of balcony to enjoy the views, but are not interested in having a terrace on the roof. The Client prefers a Scandinavian-style design with simple, elegant and clear forms. They would also like to have 'walk-in' wardrobes. (KISS – Keep It Smart and Simple!).

The maximum size of the buildings is 170m<sup>2</sup> on two floors – excluding the basement.

Your Client would also like 3-4 rooms in the basement, which should have both internal and external staircases. All the rooms in the basement – which is not for habitation - must have light shafts to provide daylight.

The Client is very 'environmentally conscious' and wants as many sustainable solutions as possible in their new house. Such suggestions must be of the same high standard and quality as traditional building constructions/materials. Please think about such matters when considering materials for floors, insulation and surface finishes.

#### Construction

Your client has some specific demands regarding the construction and technical installations in the house.

The storey-partition between the basement and ground floor must be made using prefabricated concrete elements.

The storey-partition between the ground floor and 1<sup>st</sup> floor must be made using timber joists.

Stensballe has District heating supply, which you could use for heating, but the Client would like you to consider other sources of heating which could be solar heating, earth heating or other alternative. They do, however, definitely want a wood-burning stove in the living room. Mechanical or natural ventilation can be used throughout the house.

Stensballe has relatively high level of Radon gas – be careful to follow the requirements in the Building

Regulations and the guidelines in Sbi 233 to prevent Radon gas entering the house.

### **Demands**

The buildings should comply with current legislation in BR2015 (Building Regulations 2015) Remember to take Local by-law scheme no. 141 into consideration. Your team will prepare (elaborate) the following three design phases:

1. Outline Proposal. Proposal for a working methodology is found below. Similar introductions will be given for the subsequent phases, which are:
2. Scheme Design and
3. Detail Design 1

### **Suggestions for your Proposal for working methodology:**

- First of all, your group should prepare an overall 'Architect's Brief' - a more detailed description of your house.
- After that EACH of you has to elaborate your own Outline Proposal using hand sketches and *SketchUp* - based on your Client's wishes and your group's Architect's brief. Each of you prepares a different house design including different suggestions as to where the house should be placed on the plot. Your final plans should be presented to the other group on A3 paper. Another group in the class will assess each of your designs and decide which of them should form the basis for the groups final Outline Proposal and following Scheme Design and Detail Design.

Please NOTE - The Teachers' may overrule the group's decision if they feel that the design chosen is too complex or time consuming in relation to the time and resources allocated for a 2<sup>nd</sup> semester project.

A final poster for the client in format A0 must be prepared in LayOut and printed out. Analyses, preliminary sketches, calculations and portfolio must be presented as pdf-files-using PowerPoint.

### 3.1 Guiding time schedule

To the extent possible, the semester will proceed in accordance with the guiding time schedule presented in Figure 5.

Figure 5: Guiding time schedule

Calendar week	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
Tuition week	1	2	3	4	5	6	7		8	9	10	11	12	13	14	15	16	17	18	19	20	
No. of tuition days	5	4	4	4	4	4	4		3	4	4	3	4	2	4	3	4	4	4	4	=	68
INTRODUCTORY ASS.																						
INTRO TO VIA																						
OUTLINE PROPOSAL (Team work)																						
SCHEME DESIGN (Team work)																						
MIDTERM EVALUATION																						
INDUSTRY & TECHNOLOGY																						
INTERNATIONAL PROJECT WORK																						
DETAIL DESIGN 1. (Team work)																						
BUILDING SITE REPORT (Team work)																						
EVALUATIONS AND EXAM																						
PORTFOLIO																						
GUIDANCE MEETINGS x 2																						

Source: The semester team's creation

### 3.2 References and knowledge base

#### 3.2.1 Cross-disciplinary references

- [ICT and BIM](#)

#### 3.2.2 Single-subject references

- [Study material](#)