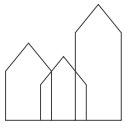


Get updated  
VIA University College



# SEMESTER SYLLABUS 1ST SEMESTER PLOT AND HOUSE IN 1-2 STOREYS

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

VIA University College Aarhus

Spring 2016

## CONTENT

---

<b>1</b>	<b>THE PROGRAMME</b>	<b>5</b>
<b>1.1</b>	<b>The study environments</b>	<b>5</b>
<b>1.2</b>	<b>Teaching- and workforms</b>	<b>6</b>
1.2.1	Individual learning offers	6
<b>1.3</b>	<b>Study activity / Attendance</b>	<b>7</b>
<b>1.4</b>	<b>Quality-assurance and -development of the programme</b>	<b>7</b>
1.4.1	Your involvement	7
1.4.2	The local DSR (Student Council)	8
<hr/>		
<b>2</b>	<b>THE SEMESTER</b>	<b>9</b>
<b>2.1</b>	<b>Entrance requirements</b>	<b>9</b>
<b>2.2</b>	<b>Study start test</b>	<b>9</b>
<b>2.3</b>	<b>Learning aims for the 1st semester (transcribed from the curriculum)</b>	<b>9</b>
<b>2.4</b>	<b>The project work</b>	<b>10</b>
2.4.1	Single-subject teaching	11
2.4.1.1	Building Design (BDS)	11
2.4.1.2	Structural Design (STD)	13
2.4.1.3	Building Services (BSE)	13
2.4.1.4	Building Planning and Management (BPM)	14
2.4.1.5	Communication (COM)	15
2.4.1.6	Land Surveying and Spatial Planning (SUR)	16
2.4.2	Other study elements	16
<b>2.5</b>	<b>Tests and evaluations</b>	<b>16</b>
2.5.1	Evaluation of the work with the project	17
<hr/>		
<b>3</b>	<b>THE TEACHING</b>	<b>18</b>
<b>3.1</b>	<b>Guiding time schedule</b>	<b>18</b>
<b>3.2</b>	<b>References and knowledge base</b>	<b>18</b>
3.2.1	Cross-disciplinary references	20
3.2.2	Single-subject references	20

# SEMESTER SYLLABUS

## Welcome to the Architectural Technology and Construction Management programme at VIA!

We sincerely hope you are going to enjoy your studies at VIA, whether it is for 2 years, becoming an AP Graduate in Construction Technology or for 3 ½ years becoming a Bachelor of Architectural Technology and Construction Management.

You will get to know a lot of new students and teachers, and you will probably experience that the teaching principles are different from what you are familiar with from previous.

The main learning approach is Problem Based Learning (PBL) based on specific projects - ranging from simple single-family houses to industrially produced buildings and more complex multi-storey buildings as well as refurbishments. You finish the last semester with a dissertation and a bachelor project of your own choice, e.g. in cooperation with a specific company or client.

You will learn how to plan and design a building project, i.e. how to plan and draw, and how to describe and manage the production of building projects as it is done in real life by consultants, building component manufacturers and entrepreneurs in the building industry.

During the course of programme you will learn much more about yourself and your preferred learning style, and you will gain new social, technical and theoretical competencies within different working fields in relation to construction.

Along the way, you may find one field, particularly interesting and you may want to further your qualifications within that specific field. You may achieve this through the elective programme elements on the 4<sup>th</sup> and the 5<sup>th</sup> semester where you can specialize. You may also specialize by choosing an internship, final dissertation and bachelor project within your field of interest.

We encourage you to make use of the facilities made available to you in the form of teaching, physical and digital services, and not least, the social opportunities for good teamwork with other students and employees at the college.

### Quality assurance and development

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

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>.

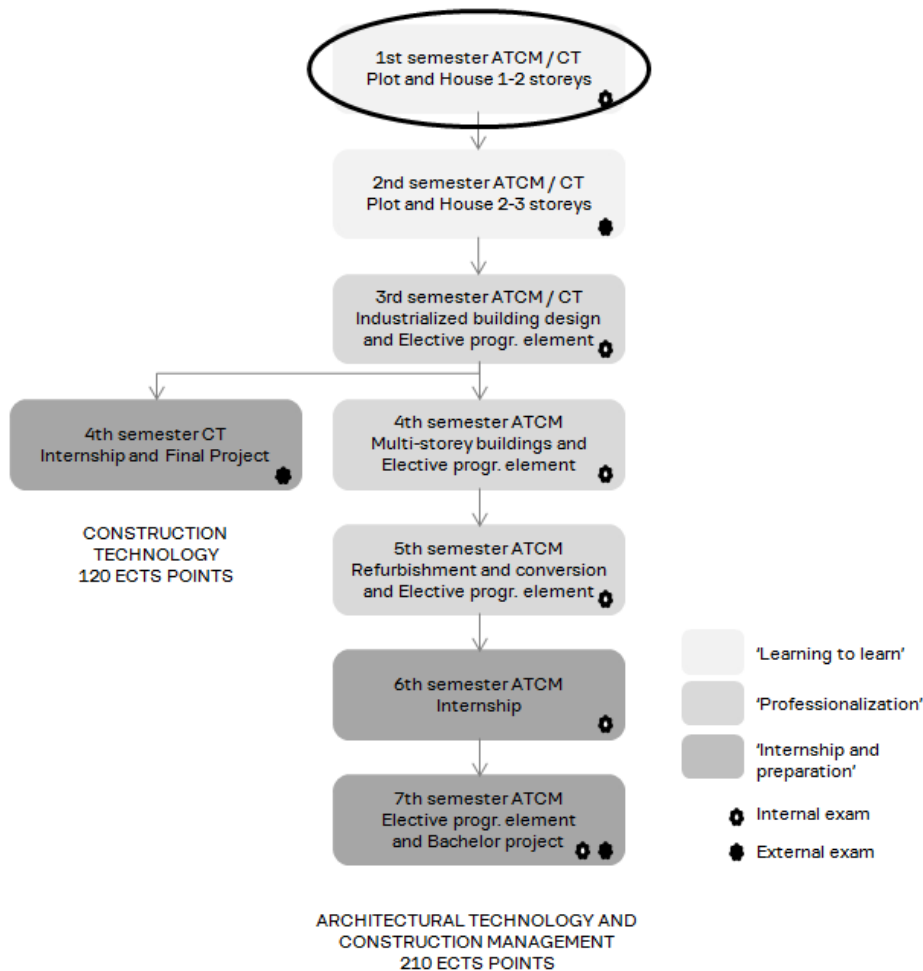
As a student, you have your own 'workplace' at the college, which we encourage you to use. The 'workplace' will change from semester to semester, depending on the size of the classes and your choice of specialization.

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

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

### **"Learning to learn"**

This environment emphasizes the learning of how to be a successful student – finding your own learning style and gaining good study- and work-habits in a PBL (Project Based Learning) environment. It is also an introduction to the professional world of the Bachelor of Architectural Technology and Construction Management, and you acquire basic knowledge and skills concerning working methods and tools used within the profession.

### **"Professionalization"**

This environment increases focus on the professional content of the projects and you learn more about advanced methods for carrying out analyses.

### **"Internship and job preparation"**

Through the internship in a company of your own choice, and through your elective dissertation and bachelor project (defined within delimited areas), you are required to immerse yourself further and independently into theory and practice.

## **1.2 Teaching- and workforms**

The programme has a varied teaching and learning environment – ranging from traditional teaching- and workforms with lectures to new teaching- and workforms with innovative projects carried out in cooperation with real companies.

As a student, you are responsible for your own learning, and we put much emphasis on that. The Study Activity Model accentuates which study activities the teachers will initiate, and which activities you should initiate. It also accentuates which activities both teachers and students participate in, as well as activities where only students participate (four categories). The model illustrates the distribution of time for each type of study activity in percent. It also illustrates the development in the pedagogical environment and consequently how you are expected to become gradually more and more responsible for your own learning as the programme progresses.

The programme is primarily based on Problem Based Learning (PBL), which means that the single subject inputs and assignments all relate to, and support the project work.

Lectures in theory, group guidance and independent project work are organized in relation to the specific class and most activities take place in the same classroom.

You are expected to keep yourself updated on relevant academic presentations regarding your career, labour union etc., which may be on offer during the semester.

During the programme, you are introduced to a tool called Portfolio. The use of this tool will help you in getting a better understanding of your strong and weak points, and consequently help you in finding out in which areas you need to increase your study efforts and in which areas you could possibly reduce your efforts.

### **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 (these assignments must be approved for you to continue to the next semester)
- 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**

	<b>Method</b>	<b>Primary users</b>	<b>Time</b>
<b>Semester introduction</b>	You and the teachers align your expectations to the semester with a starting point in the semester syllabus.	Students and teachers	At the start of each semester.
<b>Portfolio</b>	You reflect upon your own effort and what you have to do in order to reach your learning aims.	Students	Continually through the course of the study programme.
<b>Midterm teaching Evaluation</b>	The teachers select a method, typically it is orally.	The teachers	Approximately in the middle of the semester – it will be stated in the guiding time schedule.
<b>Final Teaching Evaluation</b>	You receive a mail with a link to the online survey from the study programme. In semesters where you can be gath-	Teachers  The programme management	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

	ered in class, the teachers will discuss the results with you.		evaluated.
<b>Final Evaluation of the Internship</b>	You receive a mail with a link to the online survey from the study programme.	The programme management	
<b>Final Evaluation of Study abroad</b>	You receive a mail with a link to the online survey from the International Office.	The programme management The International Office	By the end of each semester.
<b>Student Satisfaction Survey</b>	You receive a mail with a link to the online survey from VIA Quality. The programme management invites the class representatives to a follow-up meeting.	The programme management  VIA's 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 \(Aarhus\)](#).

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

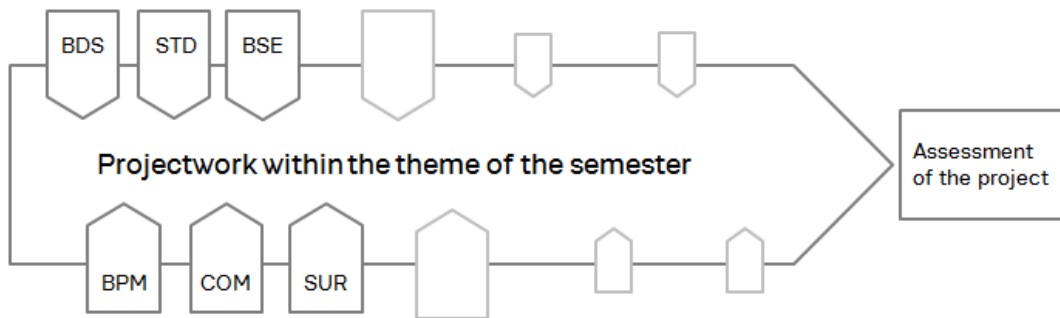


---

## 2 THE SEMESTER

During this semester, your studies will evolve around one continuous project in agreement with the overall semester theme. Figure 2 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 by solving problems related to the given project 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 2: Cross- disciplinary semester



Source: Created at VIA Built Environment

### 2.1 Entrance requirements

In order to be admitted to the 1<sup>st</sup> semester, you must meet the admission requirements defined in the Danish Ministerial order regarding admission to the Bachelor of Architectural Technology and Construction Management profession bachelor degree program.

### 2.2 Study start test

To ensure that you as a student is study active and to introduce some tools for ongoing self-reflection in relation to your learning a Study start Test is carried out approximately 6 weeks after the Study start. The test consists of 2 parts: a written questionnaire and a dialogue with one or more of your teachers. Based on the written reply and the dialogue, the teachers assess whether you “have passed” or “have not passed”. If you don’t pass, a new test is carried out after additionally 4 weeks. You only have 2 attempts to pass the Study start test.

### 2.3 Learning aims for the 1st 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 1st semester you should have learned:

- and have the ability to reflect on basic theoretical and technical disciplines and their relevant documentation
- and have the ability to reflect on methods and practice used in planning and management as well as collaborative working and learning
- general mathematical principles that are important within the profession
- and understood common building practices related to the 1.semester project theme

- common methods of communication, tools and standards related to the 1st semester project theme
- about relevant laws and regulations
- how to gather data related to project assignments and local authority applications in addition to the preparation of related documents

### **Skills**

At the end of the 1st semester you should:

- know about the trades, professions and subject disciplines involved in the building sector and have gained insight into the building processes related to the 1st semester project theme
- have the ability to use planning and design methods for a 1-2 storey house as well as methods involved in the planning of the building process
- have gained initial skills in applying methods and tools for the collection and analysis of information relevant to the profession
- have the ability to communicate practical and professionally related problems to those professionally involved in the 1st semester project theme

### **Competencies**

At the end of the 1st semester you should:

- have the ability to prepare relevant construction and documentation materials related to the 1st semester project theme
- understand the interrelation of the various subject disciplines in problems related to the 1st semester project theme
- have the ability to identify what they still need to learn based on the knowledge, skills and competencies acquired during the semester

## **2.4 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 are forced to collaborate 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 for the 1<sup>st</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 1-2 storeys.

The project is designed as a BIM model in 2D and 3D.

### **Outline Proposal**

Based on a client's brief you (in groups) will be asked to sketch a proposal for a single-family house in 1-2 storeys. The house should have a size of approximately 160 m<sup>2</sup> without basement, but possibly with a garage. The house must be designed to fit into a specific plot assigned to the group.

The design work is carried out in 3D and presented on posters for approval by the client.

Supplementary documents and analyses are prepared for presentation through PowerPoint or similar programme.

The groups present results to 'the client' and to each other in class.

### **Scheme Design**

During this phase the groups will further develop an outline proposal up to scheme design level. The individual teams will 'work' with a new plot. The scheme design must document that the house can actually be

constructed within the framework of current laws and regulations. The documentation will be in the form of analyses – certificates- details – plans – sections and elevations.

### Detail Design 1 and 2

It is not within the scope of the 1st semester theme to work out final Detail 1 and 2 material, but in order to develop the digital drawing skills, each student will further elaborate a given plan to the level required for 'authority approval' and 'work drawing' for construction.

## 2.4.1 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)	9 ECTS-points
	Material Science (BDS/MSC)	2 ECTS-points
Structural Design (STD)	Structural Design and Mathematics (STD/MATH)	5 ECTS-points
Building Services (BSE)	Building Services and Building Physics (BSE/BPHY)	2.5 ECTS-points
Building Planning and Management (BPM)	Building Planning and Management (BPM)	2.5 ECTS-points
Communication (COM)	Communication (COM)	5 ECTS-points
Land Surveying and Spatial Planning (SUR)	Land Surveying and Spatial Planning (SUR)	3 ECTS-points
<b>Total duration of the semester:</b>		30 ECTS-points

Source: Created at VIA Built Environment

### 2.4.1.1 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</li> <li>- the history of styles, building materials and building methods in traditional Danish single-family houses</li> <li>- fundamental architectural guidelines regarding the aesthetic setting</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 the single-family house through functional analyses</li> <li>- collect information and perform functional analyses in regards to the subject</li> <li>- achieve an understanding of drawings through sketching, free-hand drawing and 3D mod-</li> </ul>

	elling
<b>Content</b>	<ul style="list-style-type: none"> <li>- The overall theme of the semester - the single-family house</li> <li>- The history of the single-family house</li> <li>- Architectural understanding</li> <li>- Tools for planning, analysis and visualization</li> <li>- Development and presentation of your own proposal</li> </ul>

Source: Created at VIA Built Environment

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

<b>Duration</b>	9 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</li> <li>- contemporary building methods and building constructions</li> <li>- functional requirements for building constructions, including knowledge about Energy Efficient Sustainable Building Design and Construction</li> <li>- the legal framework governing the construction of single-family houses that have one or two floors</li> <li>- analogue and digital tools in the design and communication of the building design</li> </ul>
<b>Learning aims - Skills</b>	<p>You must be able to:</p> <ul style="list-style-type: none"> <li>- analyze and select building constructions for your project</li> <li>- achieve an understanding of drawings and constructions through sketching and 3D modelling</li> <li>- plan and develop a building from the 'first idea stage' to a stage where it can be used as a basis for local authority approval</li> <li>- prepare documentation and to communicate information about the designed building using 2D/3D drawings – in writing and orally</li> </ul>
<b>Content</b>	<ul style="list-style-type: none"> <li>- Layout of house on the plot</li> <li>- Excavation, foundation and floor structures</li> <li>- External walls and external wall completions</li> <li>- Roofing and roofing completions</li> <li>- Oral, graphic and digital presentations of the above</li> <li>- Analogue and digital tools in sketching and communication of construction (See "BIM – Building Information Modeling" under References)</li> </ul>

Source: Created at VIA Built Environment

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

<b>Duration</b>	2 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</li> <li>- building materials and their incorporation in constructions</li> <li>- building materials in the construction of single-family houses</li> <li>- processing procedures and production of building materials</li> <li>- the lifecycle term in relation to durability, maintenance and sustainability</li> </ul>
<b>Learning aims - Skills</b>	<p>You must be able to:</p> <ul style="list-style-type: none"> <li>- analyze and select building materials at a basic level</li> <li>- substantiate and document the selection of building materials</li> </ul>
<b>Content</b>	<ul style="list-style-type: none"> <li>- Preparation of a description of building components (including wood, brickwork, ceramic materials and concrete).</li> <li>- Scientific research within the area of study.</li> <li>- A visit to building material manufacturers and building sites.</li> </ul>

Source: Created at VIA Built Environment

### 2.4.1.2 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>	5 ECTS-points
<b>Learning aims - Knowledge</b>	<p>You must gain knowledge about:</p> <ul style="list-style-type: none"> <li>- units and concepts related to basic structural design and mathematics</li> <li>- the structural systems and be able to identify these in a single family house of 1-2 floors</li> <li>- masonry - its bearing capacity, masonry areas and brick lintels in small buildings</li> <li>- structural documentation</li> </ul>
<b>Learning aims - Skills</b>	<p>You must be able to:</p> <ul style="list-style-type: none"> <li>- account for loads from the building/construction components</li> <li>- communicate the structural ways of the loads through the buildings, orally and by using sketching techniques</li> <li>- account for the structural system of a single family house</li> <li>- prepare structural documentation as described in the Eurocodes</li> <li>- use mathematics (C-level) and tabled values when determining 'rough dimensions' of building components</li> </ul>
<b>Content</b>	<ul style="list-style-type: none"> <li>- Basic units, density, gravity and specific gravity</li> <li>- Action, reaction, dissolving and joining forces</li> <li>- Position plans, design assumptions and choice of construction</li> <li>- Vertical loads in accordance with current standards</li> <li>- Orientation of wind loads</li> <li>- How loads are transferred to foundations</li> <li>- Load bearing and bracing main system</li> <li>- Supports, anchoring, sheer walls, diaphragms and force transferring joints</li> <li>- Types of supports and loads</li> <li>- Masonry: <ul style="list-style-type: none"> <li>o murbinder</li> <li>o wall areas</li> <li>o brick lintels</li> <li>o pre-stressed beams and wall ties</li> </ul> </li> </ul>

Source: Created at VIA Built Environment

### 2.4.1.3 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>	2.5 ECTS-points
<b>Learning aims - Knowledge</b>	<p>You must gain knowledge about:</p> <ul style="list-style-type: none"> <li>- different types of supply lines and their location on the plot in relation to the building, the boundary line and requirements for different laying depths</li> <li>- different heating systems used in a single-family house</li> <li>- different types of ventilation used in a single-family house</li> <li>- different types of drainage pipes used inside the building and sewer, rainwater and drain pipes used in the ground (on the plot) and the connection to the main sewer system</li> <li>- various installations for water, heating, electricity and communication</li> </ul>
<b>Learning aims - Skills</b>	<p>You must be able to:</p> <ul style="list-style-type: none"> <li>- arrange a plot and house plan in relation to supply lines and service pipes</li> <li>- perform analyses and estimates for ventilation in accordance with the Building Regulations 2010</li> <li>- perform analyses and estimates for heating systems</li> <li>- plan technical installations on the basis of analyses and estimates</li> </ul>

	<ul style="list-style-type: none"> <li>- calculate U-values of some standard constructions</li> </ul>
<b>Content</b>	<p>Supply lines</p> <ul style="list-style-type: none"> <li>- Requirements, materials, laying depths and laying conditions for the following different supply lines: <ul style="list-style-type: none"> <li>o District heating</li> <li>o Natural gas</li> <li>o Electricity</li> <li>o Water</li> <li>o Wastewater</li> <li>o Rainwater</li> <li>o Communication and TV</li> </ul> </li> </ul> <p>Principles and supply pathways for water, heat, ventilation, communication lines and electrical installations:</p> <ul style="list-style-type: none"> <li>- supply pathways in floors, walls and roof/ceiling. (space conditions)</li> <li>- building Regulations requirements for ventilation</li> <li>- drawing symbols</li> </ul> <p>Principles for drain and sewer</p> <ul style="list-style-type: none"> <li>- Calculation of U-values of standard constructions used in the project</li> <li>- U-values of windows</li> </ul>

Source: Created at VIA Built Environment

#### 2.4.1.4 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>	2.5 ECTS-points
<b>Learning aims - Knowledge</b>	<p>You must gain knowledge about:</p> <ul style="list-style-type: none"> <li>- methods for effective study planning</li> <li>- the planning and management of design work</li> <li>- basic principles used in the planning of implementation</li> <li>- methods for estimating building costs</li> <li>- methods and principles for quality assurance</li> <li>- project organizations and the various parties involved – including, the design phases and forms of contracts</li> <li>- basic principles used for the filing and management of digital documents</li> <li>- the structure and content of a building component log</li> </ul>
<b>Learning aims - Skills</b>	<p>You must be able to:</p> <ul style="list-style-type: none"> <li>- plan the course of the semester logically</li> <li>- illustrate the building process in relation to the theme of this semester with consideration to the various parties involved</li> <li>- apply current planning methods involved when designing a single-family house</li> <li>- communicate the planning and implementation to the various parts involved</li> <li>- analyze the implementation and interdependency of the various building activities involved in the building of a single-family house – using a network diagram and the Gantt-charts</li> <li>- define (take-off) quantities and prepare cost estimates using m2-costs and costs of building components</li> <li>- set up a budget based on rough calculation for the various parties involved – including the client (building owner)</li> <li>- use a filing management system for your project as a group</li> <li>- use a building component log as documentation for all decisions relevant to the project</li> </ul>
<b>Content</b>	<ul style="list-style-type: none"> <li>- Study planning (personal planning and group planning)</li> <li>- Industry and Technology</li> <li>- Forms of enterprises</li> </ul>

	<ul style="list-style-type: none"> <li>- Time schedule (The Gantt-method and network planning)</li> <li>- Calculation and quantity selection</li> <li>- Specifications/Building Component Log</li> <li>- Quality insurance</li> <li>- Site arrangement</li> <li>- Plan for Safety and Health</li> <li>- Waste management</li> <li>- Production flow and division of labor</li> <li>- Teamwork</li> <li>- Group teamwork and resource management</li> <li>- Tender documents</li> <li>- Transportation logistics</li> </ul>
--	--

Source: Created at VIA Built Environment

### 2.4.1.5 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>You must gain knowledge about:</p> <ul style="list-style-type: none"> <li>- the importance of oral and written communication within the ATCM profession</li> <li>- teamwork and methods of cooperation and collaborative learning</li> <li>- the structure of reports and the significance regarding decision making</li> <li>- the structure of a digital presentation</li> <li>- the learning aims for the 1<sup>st</sup> semester</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>- develop a problem formulation</li> <li>- collect data by using methodological principles</li> <li>- both orally and in writing – reflect upon your own learning, including your collaboration with others</li> <li>- write a report as a documentation of the work and phase</li> <li>- use study techniques relevant to PBL</li> </ul>
<b>Content</b>	<p>Collaboration and learning</p> <p>Portfolio - including:</p> <ul style="list-style-type: none"> <li>- Self-reflection (learning aims, self-evaluation and knowledge sharing)</li> <li>- Reflection on subjects (learning aims, self-evaluation and knowledge sharing)</li> <li>- Documentation of learning styles, counselling meetings, team contracts, Project meetings</li> <li>- An introduction to team/group organized work</li> <li>- Incorporate practical elements in group-/team work</li> </ul> <p>Study techniques, including:</p> <ul style="list-style-type: none"> <li>- Information retrieval</li> <li>- Reading and note-taking techniques</li> <li>- Mind Map on paper and digitally</li> </ul> <p>Communication:</p> <ul style="list-style-type: none"> <li>- Verbal presentation technique</li> <li>- Writing decision and narrative minutes of meetings</li> <li>- Formulating problems</li> <li>- Presentation technique</li> <li>- Writing reports</li> </ul>

Source: Created at VIA Built Environment

### 2.4.1.6 Land Surveying and Spatial Planning (SUR)

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

Subject box 8: Land Surveying and Spatial Planning (SUR)

<b>Duration</b>	3 ECTS-points
<b>Learning aims - Knowledge</b>	You must gain knowledge about: <ul style="list-style-type: none"><li>- the system of the Danish Planning Act</li><li>- site plans, technical maps and the cadastral map</li><li>- the Danish systems of coordinates and heights</li><li>- the cadastral system and land registration</li><li>- building legislation and building regulations</li><li>- building position methods</li></ul>
<b>Learning aims - Skills</b>	You must be able to: <ul style="list-style-type: none"><li>- perform a benchmark levelling using a levelling instrument and calculate reduced levels</li><li>- read and understand local plans and assess whether a specific building complies with the local plan</li><li>- collect local plans and other documents for a given area</li><li>- collect, read and understand easements</li><li>- apply the provisions in the Danish Building Regulations on separation distances and building lines as well as the provisions in the Danish Planning Act on planning zones</li><li>- plan the layout of a plot in relation to a suitable placement of a building</li></ul>
<b>Content</b>	Land Surveying and Spatial Planning report: <ul style="list-style-type: none"><li>- The provisions in the Danish Building Regulations on separation distances and building lines</li><li>- The Danish Planning Act</li><li>- Local plans and the framework provisions of municipal plans</li><li>- Easements and registration of easements</li><li>- Levelling and levels</li><li>- Site plans</li><li>- Contour plans</li><li>- Building position methods</li></ul>

Source: Created at VIA Built Environment

## 2.4.2 Other study elements

During the semester, the Semester team can plan other study elements, e.g. in corporation with the students. This will appear on the time schedule or the schema for each class.

## 2.5 Tests and evaluations

At the end of the semester, an internal 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.



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

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

<b>Study element</b>	<b>Evaluated before the internal evaluation</b>	<b>Evaluated in the internal evaluation</b>
The work with the project in relation to 'Plot and House in 1-2 storeys'		X
Reports	X	
Portfolio (or similar self-reflection)	X	X
Land Surveying and Spatial Planning report	X	

Source: Created at VIA Built Environment

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

## **2.5.1 Evaluation of the work with 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.

In the 1<sup>st</sup> semester, greater emphasis is put on learning, study method and working process than on the quality of the technical solutions and the documentation material.

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

### 3 THE TEACHING

#### 3.1 Guiding time schedule

To the extent possible, the semester will proceed in accordance with the guiding time schedule presented in Figure 3.

Figure 3: Guiding time schedule

1st sem. int. S2016		Introduction	Drawing technique	Intro assignment: Camping lodge	Sketch-up	Environment and construction	Revit workshop	Study start test	Individual assignment	Study trip	Land survey	Midw. sem. evaluation	Outline proposal	Static and math. project	Building physics and building services	Danish building constructions and materials	Scheme Design Proposal.				
Week no	Lesson week	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Introduction																					
Drawing technique																					
Intro assignment: Camping lodge																					
Sketch-up																					
Environment and construction																					
Revit workshop																					
Semester start test																					
Individual assignment																					
Study trip																					
Land survey																					
Midway semester evaluation																					
Outline proposal																					
Static and math. project																					
Building physics and building services																					
Danish building constructions and materials																					
Scheme design proposal																					

Source: The semester team's creation

#### 3.2 References and knowledge base

##### Addition to 2.4 Tests and Evaluations

###### Study Start Test:

The Test consists of 2 parts: 1. A writing part, which include a multiple choice test based on professional knowledge and a writing reflection where you need to answer a number of predefined questions. 2. A dialogue, which takes its starting point in the first part of the Test. The dialogue is conducted by one or more lecturers.

Additionally, your student activity will be assessed continuously in the period up to the Study Start Test. This assessment will be an integrated part of the final assessment. The final assessment is based on:

###### 1: Presence:

*Have you been physically present at school during the first 5 weeks of the semester?*

The assessment of this parameter is based on daily observation of the students. Presence at scheduled classes including presentations, counselling, evaluation etc. is of high importance. Moreover, the students' presence while the lecturer is absent will also be assessed. The studies are designed to emphasize the

significance of being present at school during daily group work activities to be able to demonstrate readiness to studies and responsibility for own learning.

The lecturer, who is in contact with the class, will undertake the observation and registration of presence.

#### 2: Student activity:

*Have you been active during the activities of the first 5 weeks?*

The assessment is based on daily observation of the students. Apart from physical presence at school, it is highly significant, that you take an active part in taking your education. It means that it is not sufficient, for example, to be present at a presentation and be a passive and uncommitted student.

To be considered as an active student, you are expected to be aware of the teaching that takes place in the classroom and take part in it. You can be active by, for instance, asking questions, taking notes, joining discussions in the group, sharing the workload in the group to make the assignments given by the lecturers etc.

The lecturer, who is in contact with the class, will undertake the observation and registration of presence.

#### 3: Portfolio-platform:

*Has the student made a portfolio-platform?*

The assessment is undertaken based on an examination of your portfolio-platform, as long as it is publicly available. In case it is saved in a line of folders on your personal computer, a screenshot is to be attached the writing part of the Study Start Test to document the portfolio-platforms existence.

Creation and use of the portfolio-platform is explained in the portfolio class. The choice of a platform is yours. The important part is to document its creation and use. To use the platform means a continual upload of written reflections, which will be based on portfolio assignments of the first 5 weeks of studies and reflections made in relation to other subjects. See also parameter 4.

A portfolio lecturer in collaboration with a lecturer selected by the portfolio team undertakes the assessment. Is the mentioned above attached to the writing part as a screenshot, lecturers selected to understand the oral part of the Study Start Test, will undertake the assessment.

#### 4: Reflection on own learning:

*Has the student made/uploaded the reflection assignments on his/her portfolio-platform?*

As minimum, following reflection assignments must be uploaded:

- Curriculum Vitae (Introduced in study week 1.)
- Survey "Expectations to the studies" (Introduced in study week 1.)
- Mindmap, connected to "Bæredygtighed/Sustainability" (DK classes) or "Environment and Construction" (Int. classes) (Introduced in study weeks 1. and 2.)
- Learning mindmap, connected to individual learning objectives set by you in relation to an assignment from the first 5 study weeks. In case the learning objectives aren't achieved during the first 5 study weeks, you will be asked to describe how he/she will achieve the learning objectives in the future. (Introduced in study weeks 1. and 2.)

It is not compulsory that lecturers noted below should be able to read the assignments mentioned above. However, it is expected that the reflections mentioned above are an integrated part of the writing reflections made by you in the writing part of the Study Start Test. It can be done either by copying the reflection assignments into the writing part of the Study Start Test or by referring to their content.

The assessment based on an examination of students' portfolio-platform is made by the portfolio lecturer, typically in collaboration with another lecturer selected by the portfolio team.

In case the assignments mentioned above are attached to the writing part, one of the lecturers selected to understand the Study Start Test will make the assessment.

#### 5: Study methodical tools:

*Have you applied the use of the study methodical tools presented in portfolio in study week 1. or 2., in the written assignment handed in relation to the Study Start Test?*

The assessment is based on a browse of the written presentation, compared to study materials on study methodical tools taught in portfolio classes during study week 1. or 2.

You are expected to illustrate how and when you applied the study methodical tools in use. It can be e.g. notes technique, preparation for presentations or knowledge sharing in the group.

The lecturers, selected to understand the Study Start Test, undertake the assessment.

### 3.2.1 Cross-disciplinary references

- ICT and BIM  
See VIA University implementation Guide; *Implementering af IKT og BIM VIA*.

### 3.2.2 Single-subject references

- **(BDS/ABDS)**

Danish architecture since 1754, The Danish Architecture Press  
Guide to Danish Architecture 1, 1000-1960,  
Jørgen Sestoft and Jørgen Herner Christiansen, Arkitektens Forlag  
Experiencing ARCHITECTURE,  
Steen Eiler Rasmussen, Chapman & Hall Ltd  
Danish Architecture, Tobias Faber, Det Danske Selskab  
GA Global Architecture  
JA Japan Architect  
a+u Architecture and Urbanism

- **(BDS)**

Building Regulations 2010 [http://www.ebst.dk/file/155699/BR10\\_ENGLISH.pdf](http://www.ebst.dk/file/155699/BR10_ENGLISH.pdf)  
SBI 230 Guidelines on the Building Regulations 2010  
SBI 189 Constructions in small dwellings  
SBI Guidelines 233 Protection Against Radon in New Buildings  
Wood 41 - Wooden Floors  
Various handbooks and websites to be recommended by your lecturers for example:  
[www.leca.dk](http://www.leca.dk)  
[www.hhcelcon.dk](http://www.hhcelcon.dk)  
[www.bib-blokke.dk](http://www.bib-blokke.dk)  
[www.rockwool.dk](http://www.rockwool.dk)

- **(BDS/MSC)**

Peter Brett: An Illustrated Dictionary of Building – ISBN no 0-7506-3684-X  
Duncan Marshall m.fl.: The construction of houses – ISBN no 978-0-08-097100-1  
Mike Riley + Chris Howard: House Construction - ISBN no 0-333-80456-2  
Barry: Introduction to construction of buildings – ISBN no 978-4051-1055-6  
Andersen: Illustrated Building Dictionary – ISBN-13 9788798703426  
Everett: Mitchell's Materials 5<sup>th</sup> edition – ISBN no 9780582219236

- **(HUS/BPM/IKT)**

[www.detdigitalebyggeri.dk](http://www.detdigitalebyggeri.dk) -  
[www.bips.dk](http://www.bips.dk) -  
[www.autodesk.com/education/home](http://www.autodesk.com/education/home)  
Revit guidelines and compendiums uploaded on It's Learning

- **(STD)**

Building Regulations 2010, [www.br10.dk](http://www.br10.dk)  
SBI Guidelines 216  
SBI Guidelines 189  
SBI Guidelines 186 – Stability in small buildings

Teknisk Ståbi 21st edition  
Eurocode 0 Basis of structural design  
Eurocode 1 Actions on structures - Part 1-1: General actions - Densities, self-weight, imposed loads for buildings  
Eurocode 1 Actions on structures - Part 1-3: General actions - Snow loads  
Eurocode 1 Actions on structures part 1-4 Wind actions

Link to the Danish national annex: <http://eurocodes.ds.dk/en/national-annexes/national-annexes-for-building-structures/>

- **(BSE)**

BR 2010 [http://www.ebst.dk/file/155699/BR10\\_ENGLISH.pdf](http://www.ebst.dk/file/155699/BR10_ENGLISH.pdf)  
SBI-guidelines 216  
The space required to accommodate services – Guidelines for plumbers and architects  
DS 418 – Calculation of heat loss from buildings  
Compendium – Drain and sewer systems

- **(BPM)**

Description of services 2012  
E-learning MS-project  
Sigma (V&S Costing books)  
Broch O B, Moesgaard J, 2008, Design Methodology Ny Tekniske Forlag , Copenhagen

- **(COM)**

**VIA Studynet**

Guide to team contract / guidance meetings  
Making a Presentation – 2005  
Learning in a POPBL environment 2006  
Writing a Building Site report - 2008  
Tuckmann's team roles 1965/2007  
Guide to writing a Bloom's taxonomy based, learning Portfolio – 2008