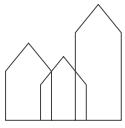


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SEMESTER SYLLABUS 2ND SEMESTER PLOT AND HOUSE IN 2-3 STOREYS

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

VIA University College Aarhus

Spring 2016

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SEMESTER SYLLABUS

Welcome to the 2nd 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 3rd 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 2nd 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 1st 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 4th semester or to become a Bachelor of Architectural Technology and Construction Management after the 7th 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

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 education¹.

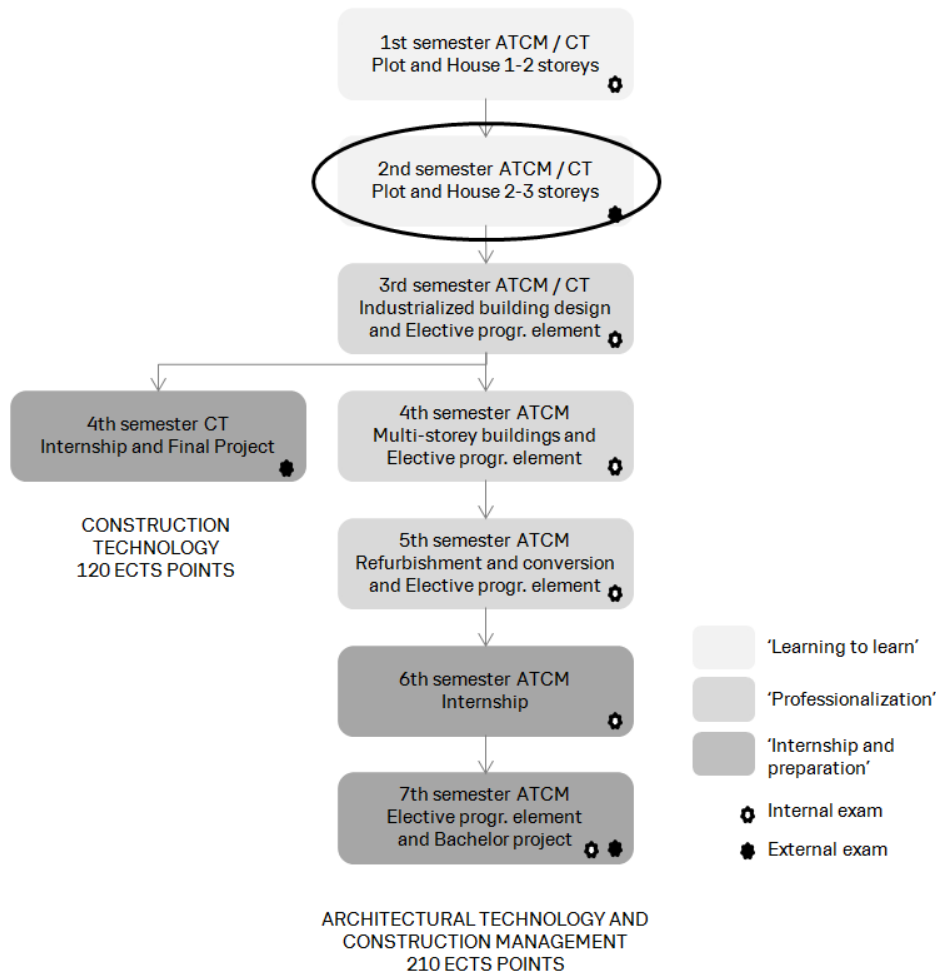
As a student, you have your own 'workplace' at the college, which we encourage you to use. The 'workplace' will change from semester to semester, depending on the size of the classes and your choice of specialization.

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

¹ 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.

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. 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

	Method	Primary users	Time
Semester introduction	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.
Portfolio	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.
Midterm teaching Evaluation	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.
Final Teaching Evaluation	You receive a mail with a link to the online survey from the study programme. In semesters where you can be gathered in class, the teachers will discuss the results with you.	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 evaluated.
Final Evaluation of the Internship	You receive a mail with a link to the online survey from the study programme.	The programme management	
Final Evaluation of Study abroad	You receive a mail with a link to the online survey from the International	The programme management	By the end of each semester.

	Office.	The International Office	
Student Satisfaction Survey	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.

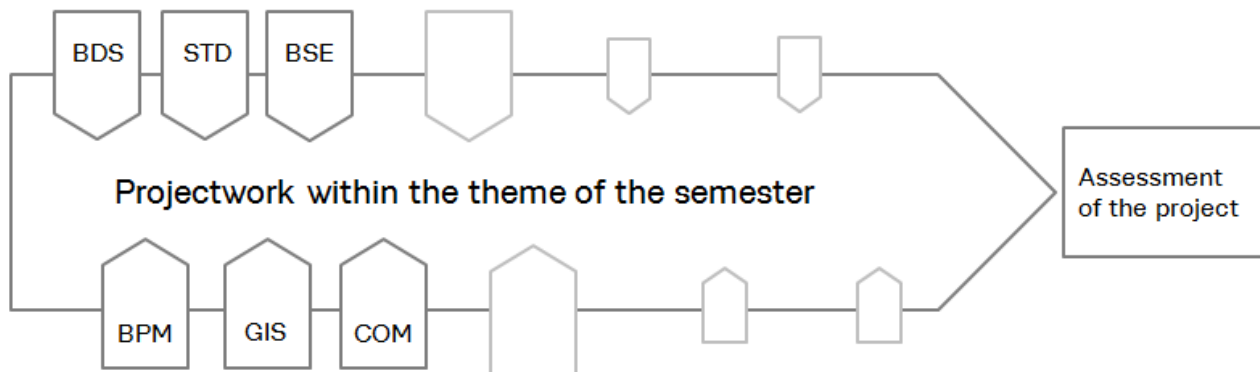
The programme management at VIA Built Environment in Horsens, Aarhus and Holstebro respectively continuously involve the local DSR in a discussion of the work with quality assurance and development of the programme, including:

- 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

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.

2.1 Entrance requirements

In order to be admitted to the 2nd 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 learned:

- and have the ability to reflect on the general design, planning and management tools, technical installations, static principles and documentation for a dwelling with 2-3 storeys
- and have understanding of general execution methods in the construction process
- of general communication methods, tools and standards when designing a dwelling with 2-3 storeys

Skills

At the end of the 2nd semester you should:

- at a basic level, have the ability to use methods and tools for the collection and analysis of information regarding the main theme of the semester
- at a basic level, have the ability to assess theoretical and practical issues related to the design of a single-family house and justify the selected actions and solutions

- at a basic level, have the ability to use design methods for the layout of houses in 2-3 storeys and apply methods for organizing their construction
- at a basic level, have the ability to convey practical and professional issues and solutions to partners and end-users

Competencies

At the end of the 2nd semester you should:

- at a basic level, have the ability to use skills and knowledge acquired through working with the theme of the semester in order to carry out documented analyses of relevant technical issues and propose solutions to these
- at a basic level, have the ability to in collaboration with others - carry out the design of a building in accordance with the semester theme and account for principles used in the construction phase

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 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 in the 2nd 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 2-3 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)	12 ECTS-points
	Material Science (BDS/MSC)	2 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)	4 ECTS-points
Geographic Information Systems (GIS)	Geographic Information Systems (GIS)	0.5 ECTS-points
Communication (COM)	Communication (COM)	2.5 ECTS-points
Total duration of the semester:		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)

Duration	1 ECTS-point
Learning aims - Knowledge	<p>You must gain knowledge about:</p> <ul style="list-style-type: none"> - the subject in general, its methods and practice, with an emphasis on function, energy and sustainability - the history, development, building materials and building methods in single-family houses - fundamental architectural guidelines regarding the aesthetic setting - major international architects and their use of building materials and methods applied - sustainability in an architectural perspective in general
Learning aims - Skills	<p>You must be able to:</p> <ul style="list-style-type: none"> - design the layout of a single-family house through information retrieval and functional analyses - master drawing techniques at a basic professional level
Content	<ul style="list-style-type: none"> - The overall theme of the semester - the single-family house (expanded) - The history of the single-family house - society - external influence - design inspiration from well-known architects - Through sketching and modelling: Describe a house designed by a well-known architect - What is architecture? To be presented on posters power point shows, models etc. - Drawing technique /perspective drawing / freehand and digital drawing /model making - Analogue and digital tools in sketching and communication of construction (See "BIM - Building Information Modeling' under References)

Source: Created at VIA Built Environment

Subject box 2: Building Design (BDS)

Duration	12 ECTS-points
Learning aims - Knowledge	<p>You must gain knowledge about:</p> <ul style="list-style-type: none"> - 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"> o functional requirements for building constructions o the regulatory framework for the construction of single family houses in 1-3 storeys

	<ul style="list-style-type: none"> ○ analogue and digital tools used in the design and communication of construction design ○ sustainable and environmentally-friendly constructions ○ constructional drawing and its communicative value
Learning aims - Skills	<p>You must be able to:</p> <ul style="list-style-type: none"> - further develop skills for analysis and selection of building constructions, including sustainable and environmentally-friendly constructions - further develop the understanding of drawings and constructions, e.g. through 2D and 3D modelling - do analyses, problem solving and documentation from Outline Proposal to Local Authority drawings
Content	<ul style="list-style-type: none"> - Design techniques and problem solving - Construction details - Communication and presentation - Convert registered, analogue/digital material to a digital 3D model - Analogue and digital tools in sketching and communication of construction (See 'BIM - Building Information Modeling' under References)

Source: Created at VIA Built Environment

Subject box 3: Material Science (BDS/MSC)

Duration	2 ECTS-points
Learning aims - Knowledge	<p>You must gain knowledge about:</p> <ul style="list-style-type: none"> - the subject in general, its methods and practice, with an emphasis on function, energy and sustainability - building materials: <ul style="list-style-type: none"> ○ Wood ○ Masonry ○ Concrete ○ Steel/metal ○ Roofs (roofing materials) ○ Glass ○ Sheet materials ○ Heat insulation materials - the use of the building materials listed above in the construction of single family houses, including such aspects as composition, processing procedures, codes of standards, environmental aspects, constructional protection, commercial availability, aspects related to construction, chemistry, etc. in accordance with the lecture plan (matrix)
Learning aims - Skills	<p>You must be able to:</p> <ul style="list-style-type: none"> - analyze, select and incorporate the building materials mentioned above - substantiate and document your selection of building materials
Content	<ul style="list-style-type: none"> - Analysis, selection and incorporation of the building materials mentioned above - Substantiation and documentation of your selection of building materials - Preparation of building component log/specifications - Preparation of material specifications on drawings - Preparation of material analysis for a number of chosen materials - Preparation of a report that includes the following: <ul style="list-style-type: none"> ○ In collaboration with the lecturers you identify an appropriate building site and define professional areas/problems of interest that they would like to investigate further ○ Whenever drawings are available, they should be scrutinized ○ Relevant theory and legislation, concerning the selected area(s) of interest, are further investigated and described ○ You monitor the construction progress; Building techniques, methods, etc. are observed and described - including quality demands set out for the project in

	<p style="text-align: center;">question</p> <ul style="list-style-type: none"> ○ You compare and assess methods used in practice to theory and legislation - Analogue and digital tools in sketching and communication of construction (See “BIM – Building Information Modeling’ under References)
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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)

Duration	4 ECTS-points
Learning aims - Knowledge	<p>You must gain knowledge about:</p> <ul style="list-style-type: none"> - different types of load bearing structures and materials, as well as the function of these in dwellings of 2-3 storeys - the structural system and the ability to identify this in your semester-project - load transferring joints and the ability to identify such joints in your semester-project - BIM-modelling in regards to primary structural building components
Learning aims - Skills	<p>You must be able to:</p> <ul style="list-style-type: none"> - account for the structural system in a 2-3 storey building - communicate the structural ways of the loads through the buildings, orally and by using sketching techniques - make extractions of drawing plans for illustration of the structural system - determine loads in your project in accordance with current Eurocode 0 and Euro-code 1 - elaborate on structural documentation in A1 and have knowledge of parts of A2-A4 for your semester-project, in accordance with BR10 - make a rough calculation of columns and beams (wood and steel) - make a rough calculation of deck structures by the use of tabled information
Content	<ul style="list-style-type: none"> - Stress resultant curves - Basis of calculations and choice of construction - Loads and safety in accordance with Eurocode 0 and Eurocode 1 - DS-EN 1990 and 1991 - Structural documentation in accordance with BR (and guidelines in accordance with. Sbi 223 - A1+ parts of A2-A4) - Load transfer - Load carrying and bracing system - Bracing and anchoring - Load transferring joint.

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)

Duration	4 ECTS-points
Learning aims - Knowledge	<p>You must gain knowledge about:</p> <ul style="list-style-type: none"> - basic information concerning supply and discharge lines - different types of installations – service pathways/ducts/shafts - alternative ways of generating energy and heating - natural and mechanical ventilation - energy calculation using the programme Be10
Learning aims - Skills	<p>You must be able to:</p> <ul style="list-style-type: none"> - account for all typical installations and pathways/service ducts/shafts in a 2-3 storey building - account for alternative ways of producing energy and hot domestic water

	<ul style="list-style-type: none"> - account for natural and mechanical ventilation - calculate all types of U-values in accordance with DS 418 - account for linear and point heat losses - calculate ventilation loss - account for different energy classes as defined in BR10 and, as a minimum, insert values for the building envelope including linear, point, and ventilation losses into the calculation programme
Content	<ul style="list-style-type: none"> - Preparation of drawings showing internal installations and drain pipes, rain water pipes and waste water pipes - Preparation of drawings for authority approval, showing drain pipes, sewer pipe and rain water - Alternative energy and heating - Running service and supply lines into the house - Analyses of water and heating plans for all storeys - Natural and mechanical ventilation in accordance with BR10 and dwellings - Transmission areas and sizes of thermal bridges in regards to DS 148 - Calculation of U-values manually or by the use of it-programmes - Energy calculation for the building envelope and calculation of ventilation loss carried out in the calculation programme Be10

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)

Duration	4 ECTS-points
Learning aims - Knowledge	<p>You must gain knowledge about:</p> <ul style="list-style-type: none"> - cost estimation and time management throughout the design phases - organization regarding different contract and tender forms - organizational theory within classical/new models - calculation of building costs, including life cycle costing/operation and maintenance - construction implementation - basic principles for Health and Safety Plans - basic quality assurance (understanding of quality concept)
Learning aims - Skills	<p>You must be able to:</p> <ul style="list-style-type: none"> - use current methods for the planning and management of the design phase – with particular focus on the main theme of the semester - analyze and assess the implementation of construction activities and their detailed inter-connection including safety for workers and weather influence - act internally in an organization in regards to a given contract and tender form - systematically embed decisions made into project documents to make knowledge sharing possible - systematically – and based on decisions made - control the budget throughout the design phases and, also, to duly communicate such decisions to the client - prepare a reasoned building site arrangement plan
Content	<ul style="list-style-type: none"> - Study planning - Industry – technology and economics - Contract and tender forms - Building component log - Cross-disciplinary project planning and management - Cost calculation and taking-off quantities - Life cycle costing - Quality assurance - Building site arrangement

	<ul style="list-style-type: none"> - Plan for Health and Safety – checklist - Tools (MS Project and Excel)
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Source: Created at VIA Built Environment

2.3.1.5 Geographic Information Systems (GIS)

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

Subject box 7: Geographic Information Systems (GIS)

Duration	0.5 ECTS-points
Learning aims - Knowledge	<p>You must gain knowledge about:</p> <ul style="list-style-type: none"> - Geographic Information Systems (GIS) - geo coding - analyses in GIS - GIS used for Computer Aided Facilities Management (CAFM) - the public geographic databases used in connection with CAFM
Learning aims - Skills	<p>You must be able to:</p> <ul style="list-style-type: none"> - collect information using WEB-GIS solutions
Content	<ul style="list-style-type: none"> - Registration task - Geo coding - WEBGIS - GIS in CAMF - Analyses in GIS

Source: Created at VIA Built Environment

2.3.1.6 Communication (COM)

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

Subject box 8: Communication (COM)

Duration	2.5 ECTS-points
Learning aims - Knowledge	<p>You must gain knowledge about:</p> <ul style="list-style-type: none"> - the importance of oral and written communication within the ATCM profession - methods of working and learning collaboratively and what could prevent a good collaboration - the structure of academic reports and the importance of documenting decisions made within the building industry - maintaining a diary as a means of documenting and communicating decisions made by the parties involved in any building project - the planning and running of meetings – including agendas and the legal importance of the minutes - basic building terms and expressions in English - the learning aims of the 2nd semester
Learning aims - Skills	<p>You must be able to:</p> <ul style="list-style-type: none"> - present academic subjects orally and in writing - Do an oral presentation in English - collect data and apply sources when writing a report - write a report in collaboration with others - write minutes at internal meetings –documenting decisions made - reflect upon your own learning, including your collaboration with others - use relevant study techniques at a basic professional level - collaborate in English with students of another cultural and educational background than Danish
Content	<p>Collaboration and learning:</p> <ul style="list-style-type: none"> - Portfolio

	<ul style="list-style-type: none"> - Team contract - Project meetings - Guidance meetings with consultants - 2nd semester syllabus <p>Communication:</p> <ul style="list-style-type: none"> - Report writing - including: <ul style="list-style-type: none"> o Harvard Anglia system of referencing Grupperapport henholdsvis individuel rapport o Well-written technical reports o Group contra Individual reports o Documenting and communication of personal observations o Writing minutes / records of meetings o Oral presentation techniques <p>SPR (English):</p> <ul style="list-style-type: none"> - Aims for Profession Bachelor degrees (Ministry of Education) - Common building related expressions - Specialized building related expressions - Teamwork with constructing architect students from different cultural and language backgrounds
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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 9: Industry and Technology

Duration	Integrated part of the single-subject teaching
Learning aims - Knowledge	<p>You must gain knowledge about:</p> <ul style="list-style-type: none"> - principles applied in running a business - the 'Tender Act', tender forms and contract forms
Learning aims - Skills	<p>You must be able to:</p> <ul style="list-style-type: none"> - do the basic construction cost calculations - develop tendering materials
Content	<ul style="list-style-type: none"> - 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. - Taking off and costing - Business budgeting - Running a business

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 10: International project work

Duration	<p>Integrated part of the single-subject teaching</p> <p>Introductory lecture followed by one day course together with Danish classes.</p>
Learning aims - Knowledge	<p>You must gain knowledge about:</p> <ul style="list-style-type: none"> - 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 - researching, defining and documenting potential international, professional collaboration

	<ul style="list-style-type: none"> - with other building cultures - consideration of the relationship between theory and practice in the internalization of the building industry
Learning aims - Skills	<p>You must be able to:</p> <ul style="list-style-type: none"> - collaborate and communicate with Danish students - prepare a report documenting potential international collaboration with a specified country - 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 - 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
Content	<ul style="list-style-type: none"> - Introduction to the project with definition and examples of various culture models, including Hofstede, Transparency International and Kwintessential - 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. - 'Teams' consisting of both Danish and International students research and document collaboration with a specific country defined by the teachers and present the results. All materials presented must be in English. - Each student documents his/her reflections of the international collaboration in their personal 'professional' portfolio.

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 11: Building site report

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

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
Project work in relation to 'Plot and House in 2-3 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 \(Aarhus\)](#).

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](#).

3 THE TEACHING

3.1 The main project

You are one of the bachelors of ATCM employed by an architect, working together with other architects, construction architects and engineers with construction design of various types. Your work tasks and responsibilities consists of a wide range of tasks such as planning, analysing, designing, calculating and the like that are typical and central for the profession.

You are currently working in a team, and the team's objective is to obtain a building permit for a single-family house. The project is a family house for a young family with two children. Architects of the company have made an outline proposal, and it was accepted by the family with some comments. Your project begins with adjusting the outline proposal according to the client's comments. After the revision of the outline and approval from the client, you will continue to work with the project, until it is of such a standard, that a building permit can be applied for, and successfully obtained. This means that you must complete SDP and DD1 phase as described in the Descriptions of Services.

The architect's office is proud of its tradition for delivering projects of high quality on time, and you are expected to work for the continuation of this tradition. The principles of high quality and on time are not hard to achieve, however you must take the following tasks seriously: project and personal planning and (time) management, document management, different analysis necessary for the quality of the project as a whole, and different (building) components, static and building physics, (client's) project economy and management, and of course presentation of the project trough project meetings, evaluation and exam.

Your preliminary estimate and budget will determine the amount of money the client will pay you in fee for the consulting. Make sure that the client get high value for his money. Keep up with your personal planning and management so you at the end of the semester can discover and learn how much the total cost will be of labour and more important; how many hours that was actually spend to complete the work.

Some of the above-mentioned subjects have been introduced and you have used them during the 1st semester, and you are expected to apply your knowledge right away. Others will be introduced during the semester.

3.2 Material science in practice

The students have to find a local building site where they can follow the constructions of a dwelling. They have to visit this site and register construction methods.

The assignment is finished by delivery of a report, which has to be approved before the exam.

3.3 Building survey

Surveying of an existing building in the local neighbourhood. Survey drawings made by hand are converted into digital drawings, incl. a 3D model.

The assignment, presented as a report to be approved before the exam.

Building Survey - Energy refurbishment

The assignment "Building Survey - Energy Refurbishment" consists of a detailed manually measured and photo documented older private house.

Each of the groups select the building for their case themselves.

An examination is made of the different kinds of energy improvements profitable for the building.

Additionally, a proposal for a reconstruction or extension should be made.

The finished result is assembled in an A3 folder, ready for presentation for a client.

3.4 Business assignment

The students are working with a fictive company that loses a bigger part of a scheduled production. The students must take action to correct the budget that leads towards a negative bottom line. The work brings in three stages of development. First to make the scenario of how bad the situation is, producing a budget before and after the crises aroused. Develop a brief new concept to cover the lost sales in the company and analyze, illustrate and specify this new idea. Secondly, this new idea must be broken down to the individual parts that can be quantified, used for a sales analysis. The last part takes all this information in, to make new budget scenarios, using the market research. Finally leaving the student with the conclusion either to proceed or to stop the development.

3.5 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

2. semester – Architectural Technology and Construction Management																				
Task name	Feb				March				April				May				June			
	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Project phases																				
Outline Proposal																				
Scheme design proposal																				
Project meetings																				
Visits / Companies																				
Evaluation																				
Material science in practice																				
Building Survey																				
Business plan																				
Design detail 1																				
Project meetings																				
Visits / Companies																				
Building Physics																				
Statics																				
Technical installations																				
Portfolio meetings																				
Exam																				

Source: The semester team's creation

3.6 References and knowledge base

3.6.1 Cross-disciplinary references

- ICT and BIM

3.6.2 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
SBI 230 Guidelines on the Building Regulations 2010
SBI 189 Constructions in small dwellings
Sbi guidelines 200 – Wet rooms
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
www.hhcelcon.dk
www.bib-blokke.dk
www.rockwool.dk

- **(BDS/MSC)**

Andrew J. Charlett and Craig Maybery-Thomas: Fundamental Building technology – ISBN no 978-0-415-69258-8

Mike Riley + Chris Howard: House Construction - ISBN no 0-333-80456-2
Barry: Introduction to construction of buildings – ISBN no 978-4051-1055-6
SBI-Guidelines 189
SBI-Guidelines 230

- **(HUS/IKT)**

www.dedigitalebyggeri.dk -
www.bips.dk -
www.students.autodesk.com -
www.traecad.dk
Revit guidelines and compendiums uploaded on Studynet

- **(STD)**

Building Regulations 2010, www.br10.dk
SBI Guidelines 216
SBI Guidelines 189
SBI Guidelines 186 – Stability in small buildings
Teknisk Ståbj, 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 annexes: <http://eurocodes.ds.dk/en/national-annexes/national-annexes-for-building-structures/>

- **(BSE)**

BR 2010 http://www.ebst.dk/file/155699/BR10_ENGLISH.pdf or
<http://bygningsreglementet.dk/english/0/40>
SBI-guidelines 216
The space required to accommodate services – Guidelines for plumbers and architects
Sbi-guidelines 189
DS 418 – Calculation of heat loss from buildings
Calculation program Be10 - Energy requirements for buildings
Sbi-guidelines 213 – Energy requirements for buildings/calculation guide.
Compendium – Drain and sewer systems

- **(BPM)**

Description of services
MS-project (absolute beginner's guide)
Sigma (V&S Costing books)
Broch O B, Moesgaard J, 2008, Design Methodology Ny Tekniske Forlag , Copenhagen
A104, Document management

- **(BPM/IT)**

<http://bips.dk/>
www.detdigitalebyggeri.dk

- **(GIS)**

'CAFM data structures: A review and examples',
Thomas Schüre and Dieter Frisch, Stuttgart University 2000

- **(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

Literature

Hovmand, U.A. & Andersen, N.M. 2006, Illustrated Building Dictionary, Dansk-Engelsk/English-Danish, Huset Hovmand Aps, Birkerød
Broch O B, Moesgaard J, 2008, Design Methodology Ny Tekniske Forlag , Copenhagen
Portfolio wix.com KOM/IKT)