AF173V Building Information Modeling 7.5 credits

Building Information Modeling

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for AF173V valid from Autumn 2015

Grading scale

A, B, C, D, E, FX, F

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

120 credits in the built environment, constructional engineering and architecture. Of these, at least 7.5 credits in the built environment, 15 credits in constructional engineering, 5 credits in architecture and 3 credits in CAD, or a Bachelor of Science in constructional engineering and design, or a Master of Science in the built environment, or an equivalent degree, as well as Swedish B/Swedish 3 and English A/English 6. In addition, courses AF1717 Technical Work, Methods and Tools 7.5 credits, AF1710 Building Technology 1, Constructional Engineering and Design 7.5 credits, AF1722 The Building Process 5.0 credits, and AF1742 Business Economics and Quality Systems 7.5 credits or equivalent.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

Upon completion of this course, the student shall be able to:

- Draw and handle 3D objects
- Create and modify objects
- Dimension and display objects
- Create construction drawings based on given and measured input data for a building
- Dimension based on basic given construction physics requirements
- Establish tables and lists based on models
- Manage views for presentation and use
- Export and import other formats
- Display knowledge of the theory behind Building Information Modeling (BIM) from the initial idea to the programme, planning, production, procurement and management stage
- Manage model data and use databases in BIM design
- Show knowledge of sun studies and display of structure and materials
- Use the new design method in which several disciplines work simultaneously on a project via a central file

Course contents

The following topics will be covered in this course:

- Handling drawings in projects with external references, layers and layouts in CAD
- General discussion on Building Information Modeling (BIM) versus traditional CAD design
- Planning for sustainable construction
- Introduction, interface and drawing procedure for Revit Architecture
- Handling intelligent objects in model building. Walls, floor and ceiling constructions.
- Using parametric objects and design conditions
- Dimensioning based on given construction physics requirements
- Families and inserted objects
- Inserting parametric objects such as dimensions, doors and windows
- Representations, views and visibility rules
- Sections, representation of materials, wall connections and CleanUp

- Elevation and story references
- Organisation of information and annotations
- Construction of the building's climate shell, such as walls and roof
- Connections to other CAD programs, SketchUp (SKP format) and AutoCAD (DWG format)
- Databases, door and window lists, room and area table, volume, quantity of material, operation and maintenance, management
- Documentation creation and layout for display and presentation of the construction model
- Practical exercises on designing via a central file

Disposition

The course will be taught through lectures in a computer lab. The lectures consist of theory, demonstration and exercises.

Course literature

Kurskompendium om BIM - Building Information Modeling

Examination

- PRO1 - Project, 3.5 credits, grading scale: P, F
- TEN1 - Examination, 4.0 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

A group project with 3-4 persons is carried out and presented by the group. The project represents 3.5 credits. Grading scale: P/F.

A practical exam at the end of the course. The exam consists of a number of practical design and engineering problems, to be solved and answered using a computer. This exam respresents 4.0 credits with the grading scale A-F.

Other requirements for final grade

To receive a final grade for this course, a passing grade on the project as well as a grade E or higher on the exam are required.

Overall course grade is based on grading scale A-F.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.