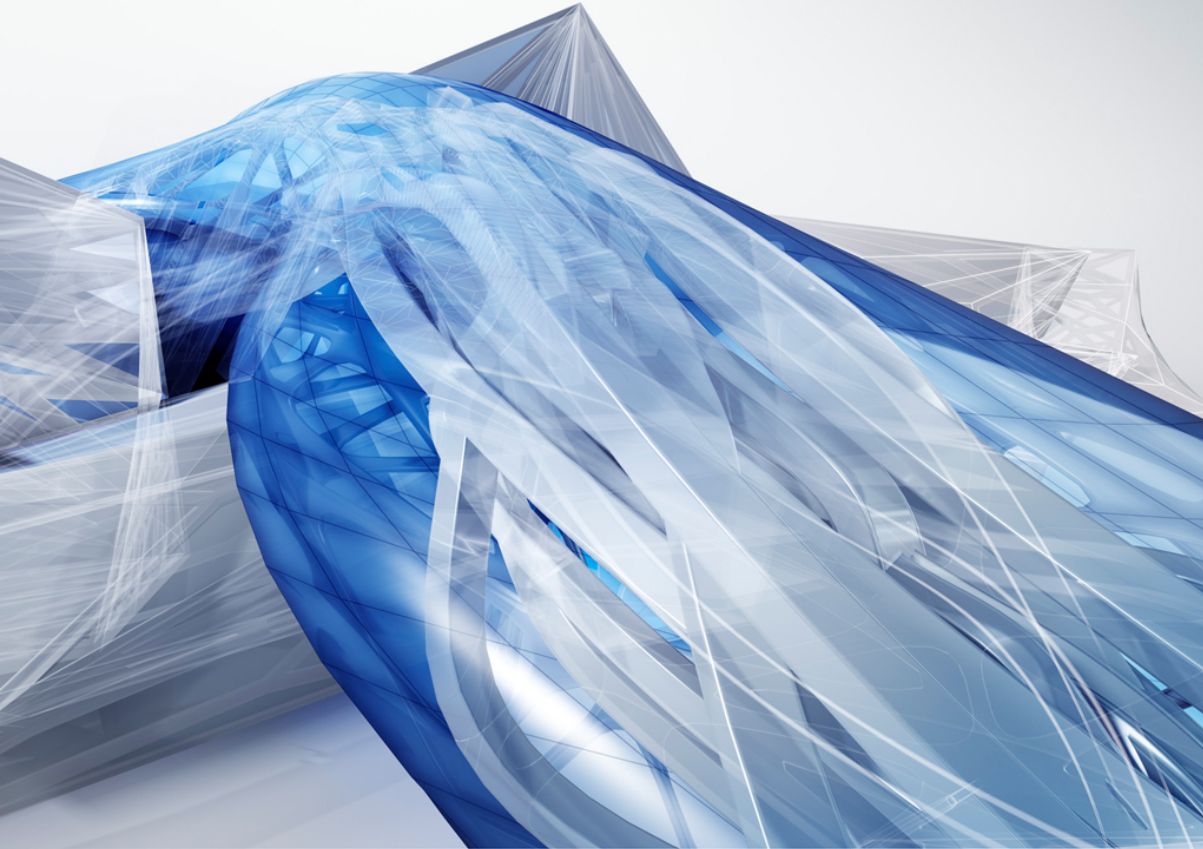


Introduction to Autodesk Revit Structures



Aalto University

BIM in Construction Management

Professor:

Vishal Singh

(vishal.singh@aalto.fi)

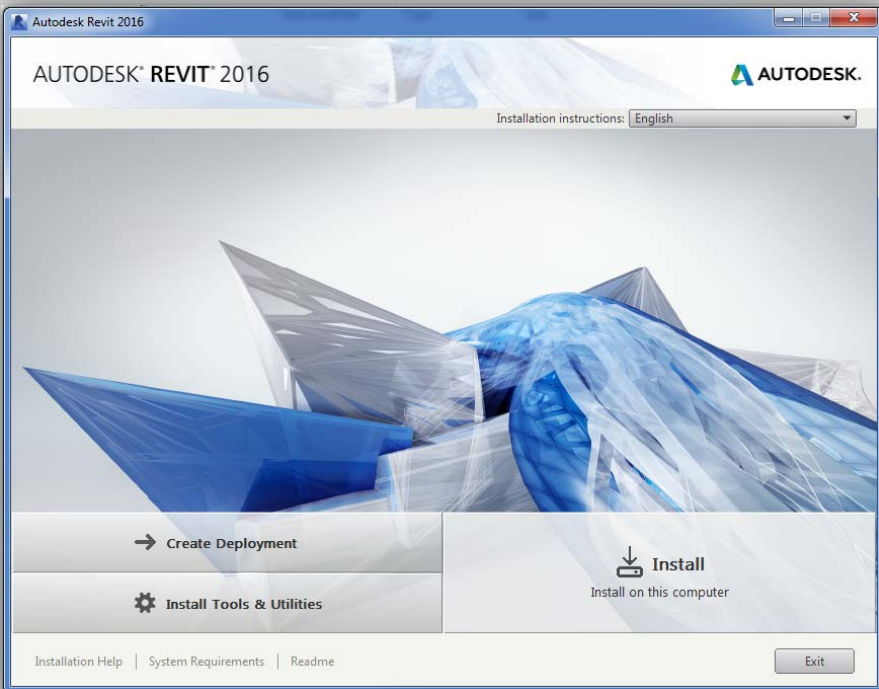
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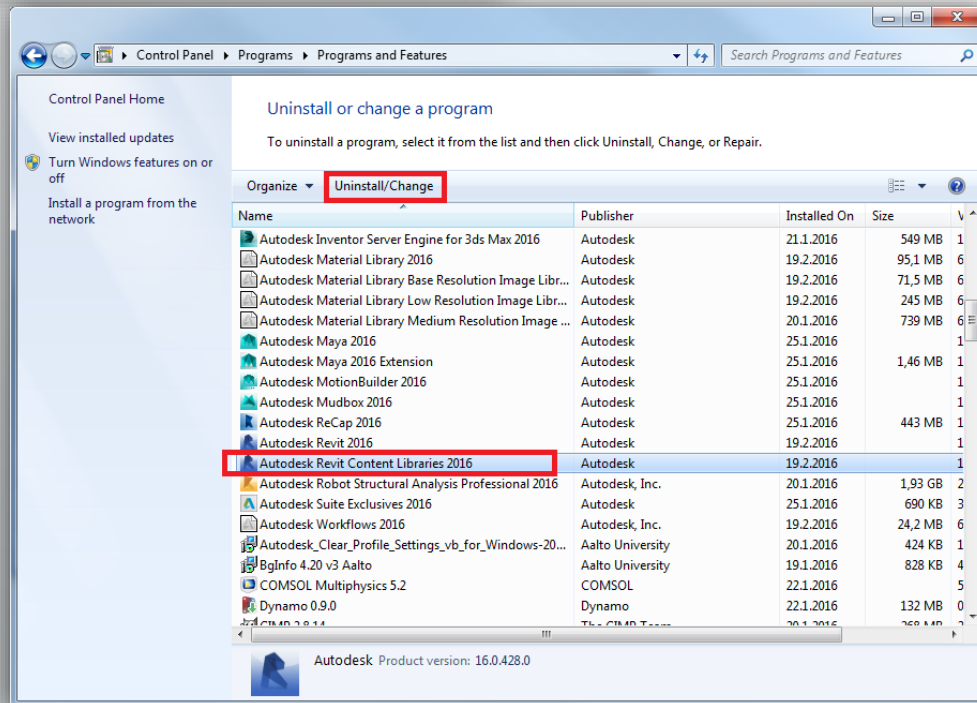
(ehsan.ghazanfari@aalto.fi)



- You can create an Autodesk account and download the latest version of Revit for free from the link below:

- Free software download for students & educators:

<http://www.autodesk.com/education/free-software/revit>



- Please note that after installation, if you receive an error in Revit stating that the Families or Templates are missing you should install **Revit Content Library** again.
- To do that, go to Control Panel > Uninstall a Program > Revit Content Library > Select Add or Remove Features and then, you can select the "Metric" Content Library to be installed again.



- Specifically built for Building Information Modeling (BIM), including features for architectural design, MEP and structural engineering, and construction
- Contains tools for design and documentation, visualization, simulation, and project collaboration



Revit Structures (Contents of the First Session)

- **Introduction to Revit:** Pros & Cons of Using Revit
- **User Interface:** Projects, Templates, Families, Panels, Views, Keyboard Shortcuts, Navigation in 2D and 3D
- **Basic Tools:** Sketching and Editing Tools (Modify Panel), Setting Up the Project
- **Structure Design Tools:** Overview of Structure Tab, Structural Walls, Structural Columns, Structural Beams, Structural Floors



Revit Structures (How to Learn?)

✓ In case you missed the first exercise session, watch the online “Essential Skills Videos”.

- In the Resources section in the initial Revit window click on Help and you will be directed to Autodesk Knowledge Network.
- There, scroll down to the end of the help content and look for the Video Library > Essential Skills Videos

The screenshot displays the Autodesk Revit 2016 interface. On the left, the 'Resources' panel is visible, with the 'Help' option circled in red. Below it, a 'Getting Started Video' thumbnail is shown. On the right, the 'Autodesk® REVIT® 2016 | HELP' page is open. The 'Video Library' section in the left sidebar is circled in red, with 'Essential Skills Videos' highlighted. The main content area shows a list of video topics under the heading 'Essential Skills Videos', including Modeling, Navigate, Families, Levels, Selection, Sketching, Visibility and Graphics, Model vs. Annotation, MEP Systems, and Analytical Model. The 'Parent topic: Video Library' and 'Related Concepts' sections are also visible at the bottom.



Revit Structures (Contents of the Second Session)

- **Family Editor:** Model in Place, Generic Models
- **Structure Design Tools:** Linking Architectural Models & Other Projects , Foundations, Trusses and Braces, Openings, Reinforcement tools
- **Results and Documentation:** Annotations, Schedules, Exports



Revit Structures (How to Learn?)

✓ In case you missed the second exercise session:

- In the Resources section in the initial Revit window click on Help and you will be directed to Autodesk Knowledge Network.
- There, expand "Model the Design" item and read through the online content for Structural Modeling

The image is a composite of two screenshots. The left screenshot shows the Revit 2016 'Resources' panel. A red circle highlights the 'Help' link under the 'What's New?' section. Below it is a 'Getting Started Video' thumbnail. The right screenshot shows the Autodesk Knowledge Network help page for 'Structural Modeling'. A red circle highlights the 'Model the Design' section in the left sidebar, which is expanded to show a list of topics including 'Structural Modeling'. The main content area on the right lists topics like 'Structural Columns', 'Beams', 'Beam Systems', 'Braces', 'Trusses', and 'Structural Framing' with brief descriptions.

Resources

- What's New?
- Help
- Essential Skills Videos
- Exchange Apps
- Revit Community

Getting Started Video

AUTODESK® REVIT® 2016 | HELP

Sign In

Structural Modeling

LIKE (0)

Add structural elements to the building model.

Topics in this section

- Structural Columns**
Use the structural column tools to add vertical load-bearing elements to building models.
- Beams**
Use beams tools to add load-bearing structural elements to building models.
- Beam Systems**
Use beam system tools to add a single structural framing element that contains series of individual beams placed in parallel to a building model.
- Braces**
Use brace tools to add diagonal members that are connected to beams and columns.
- Trusses**
Use the Truss tool to add a truss to your building model according to the layout other parameters specified in the selected truss family type.
- Structural Framing**

Model the Design

- Model the Design
- Create Modeling Views
- + Model Layout
- + Massing Studies
- + Architectural Modeling
- + **Structural Modeling**
- + MEP Modeling
- + Construction Modeling
- + Design Options
- + Revit Families



Revit Structures (How to Learn?)

✓ In case you missed the second exercise session:

- You can also watch "Structural Modelling Videos" in the Video Library of Revit Online Help

AUTODESK® REVIT® 2016 | HELP

Sign In English

Video Library

- Video Library
- Essential Skills Videos
- New Feature Videos
- More Videos**
- Model Layout Videos
- Architectural Modeling Videos
- Mechanical, Electrical, and Plumbing Engineering Videos
- Structural Modeling and Construction Modeling Videos**
- Document and Present the Project Videos
- Collaborate Videos

tasks, such as working with rebar, or specific procedures used in construction modeling. Then, select a video from the playlist on the right, and view the video in the left pane. For better viewing, click the button to display the video in full screen mode.

Structural Modeling Construction Modeling

Rebar Numbering (.. (02:38)
Demonstrates how to use rebar numbering and partitioning in a model.

Beam Alignment R.. (02:48)
Demonstrates how to use framing references and setback controls to adjust views for structural documentation.

Modify Family Ref... (02:47)
Demonstrates how to modify the references in framing families to change shape handle behavior in Revit.

Rebar Numbering (2015)



Revit (More Advanced Skills)

- Course: YYT-C3002 - Application Programming in Engineering, Aalto University



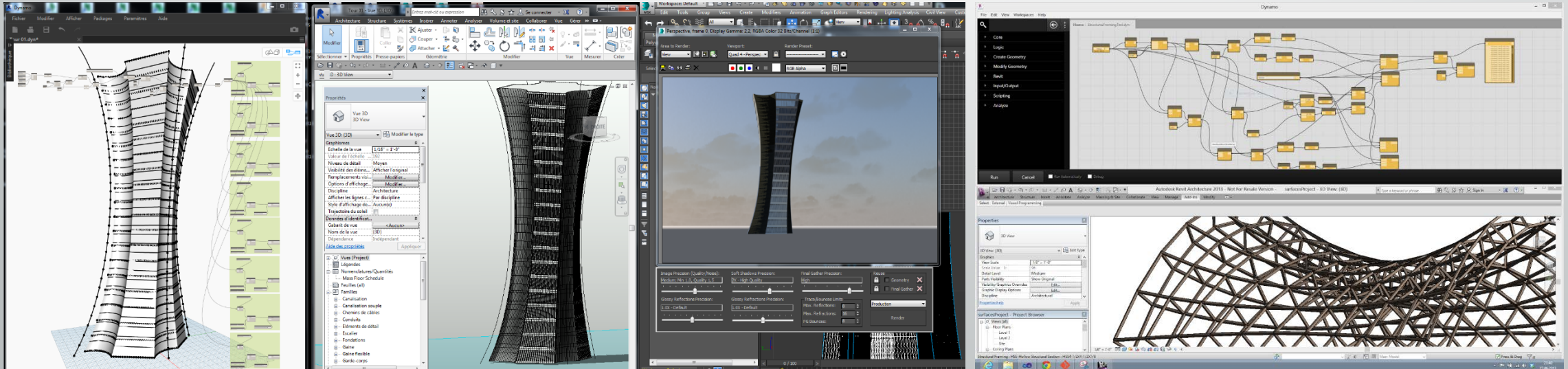
- Open source graphical programming for computational design
- Dynamo extends building information modeling with the data and logic environment of a graphical algorithm editor

[Watch the introduction video](#)



Revit API (Application Programming Interface)

- Autodesk Revit provides a rich and powerful .NET API which can be used to automate repetitive tasks, extend the core functionality of Revit in simulation, conceptual design, construction and building management, and much more
- Revit SDK: The Software Development Toolkit (SDK) provides extensive .NET code samples and documentation to help you get started developing with the Revit API





Revit Structures

Assignment:

Link your Architectural model in Revit, draw your structural system, then reinforce one structural beam, one structural column and one structural slab, add tags and annotations, create a drawing sheet containing one plan view, one 3D view and one detail view, print a PDF out of the drawing, and finally export an IFC from your model.

- ✓ Detailed instructions for the assignment will be posted to MyCourses.

Additional Resources:

Learn more about Revit:

- You can explore the online help content of Autodesk Knowledge Network:

[Knowledge Network](#)

- You can watch thousands of YouTube Videos from different organizations and engineers, as an example these ones:

[Revit Tutorials Channel](#)

- You can ask questions from Autodesk Community of Revit Users and Developers:

[Revit Community](#)

- You can watch more advanced videos made by users in Screencast page:

[Revit Screencasts](#)

... or simply Google your problem and you will find an answer in engineering forums and websites.

Thanks for your attention...