RAIC Centre for Architecture at Athabasca University

Resources for Studying Structures

Structures can be a difficult topic for architecture students. Below you can find a number of online resources that you may find helpful. All sites are active as of March 2018.

The Basics

Red Engineering has provided a good set of short videos on structural basics that some students will find useful. These can be found at:
Engineering in a Box - http://redengineeringdesign.com/engineering-in-a-box.html

Loads and Forces

There are also a number of short videos on YouTube that explain the differences between the various kinds of forces that act on a building. Two of the better ones can be found at:
https://www.youtube.com/watch?v=hXlnFgWUpDA
https://www.youtube.com/watch?v=8IN544ZKzmQ&t=1s

There is also a short video called *Load Bearing Wall Framing Basics* provides a good overview of how a building carries a load. This can be found at:
https://www.youtube.com/watch?v=a9UOwDjBZH0

Supports and Connections

A lecture called *Statics of Structural Supports* provides a good overview of the different kinds of supports and connectors. It can be found at:
http://web.engr.uky.edu/~gebland/CE%20382/CE%20382%20PDF%20Lecture%20Slides/CE%20382%20L4%20-%20Support%20Reactions.pdf

The 3rd page of the lecture provides a very good chart of various kinds of structural connections. This will be very helpful in clarifying how these connectors work and what kind of reactions are involved.

The *Mola Structural Kit* is an interesting (but sadly very expensive) way to learn about structures. Fortunately, their website also includes some very good videos that use their system to explain ideas such as connectors, moments and trusses.

You can find their videos at:
https://molamodel.com/pages/videos-1

In particular, scroll down to the last two called "Plane Frame" and "Plane Truss."

Truss Analysis

Engineers Daily provides a good overview of the different methods for analysing a truss. It can be found at:
http://www.engineersdaily.com/2011/01/3-methods-for-truss-analysis.html

Statically Determinate and Indeterminate Structures

This lecture provides a succinct summary of a difficult topic and also includes some excellent drawings that will help students understand the abstract diagrams that are used to represent actual structures:
http://slideplayer.com/slide/7772367/

Active Statics Website

The *Active Statics* website is an interactive tool created by MIT that will help you understand the way that loads and forces work in common structures. You can even use this site to mock up various kinds of structures problems.

To access these examples you need to log into:
http://acg.media.mit.edu/people/simong/statics/Start.html

This site, however, relies heavily on Java and Java is no longer supported by Firefox. This means you may need to access it using Internet Explorer or Safari or another browser. Moreover, because it relies heavily on Java, you will need to make sure that the version of Java on your computer is up to date. To download the latest version of Java (for free) go to:
https://java.com/en/download/

AIA Exam Preparation

To help students in the United States prepare for their structural exam from the American Institute of Architects, Dilip Khatri has prepared a series of YouTube videos on key aspects of the exam. There are a series of nine videos in this series. The first one called "How to Pass the Test," provides a good strategy for passing any structures exam. These can be found at:
https://www.youtube.com/watch?v=KsroawNCMJA&list=PLFoqyMMWpWIrcfRKx2xNwY9hKW2Q9AODo