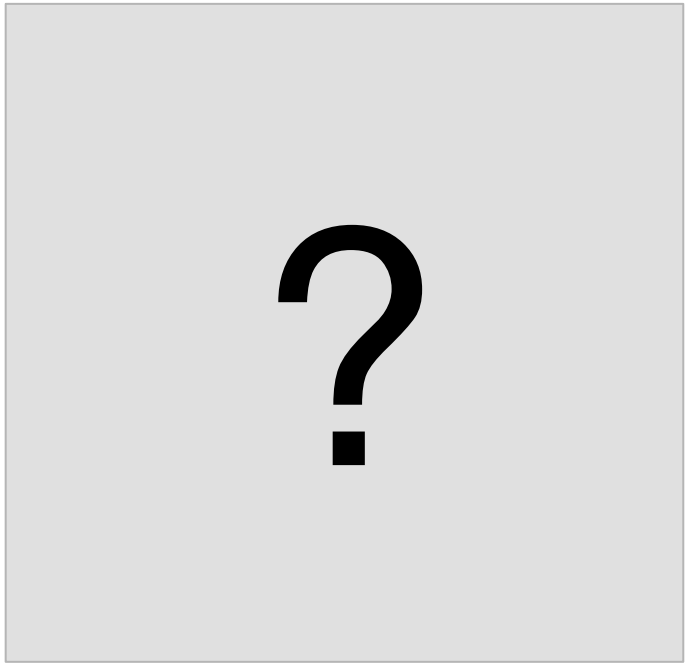
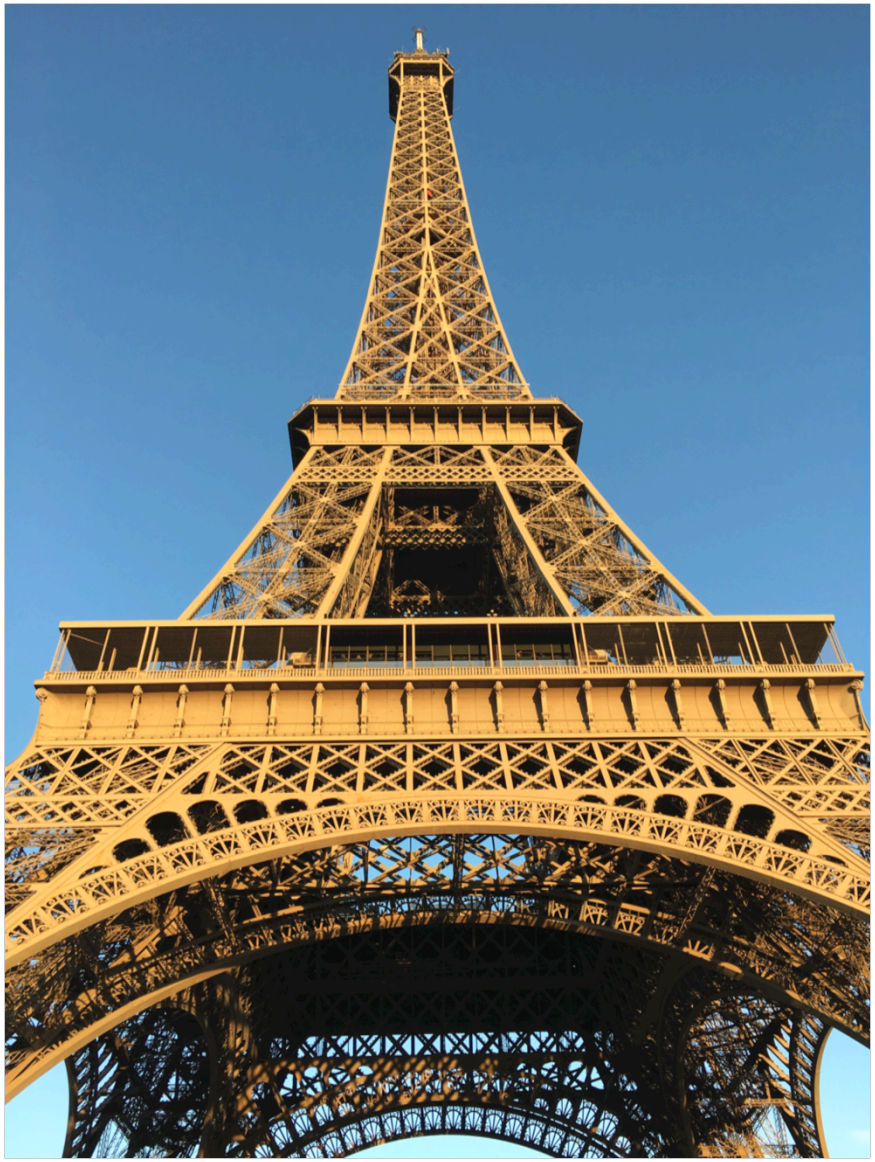
What is a structure?



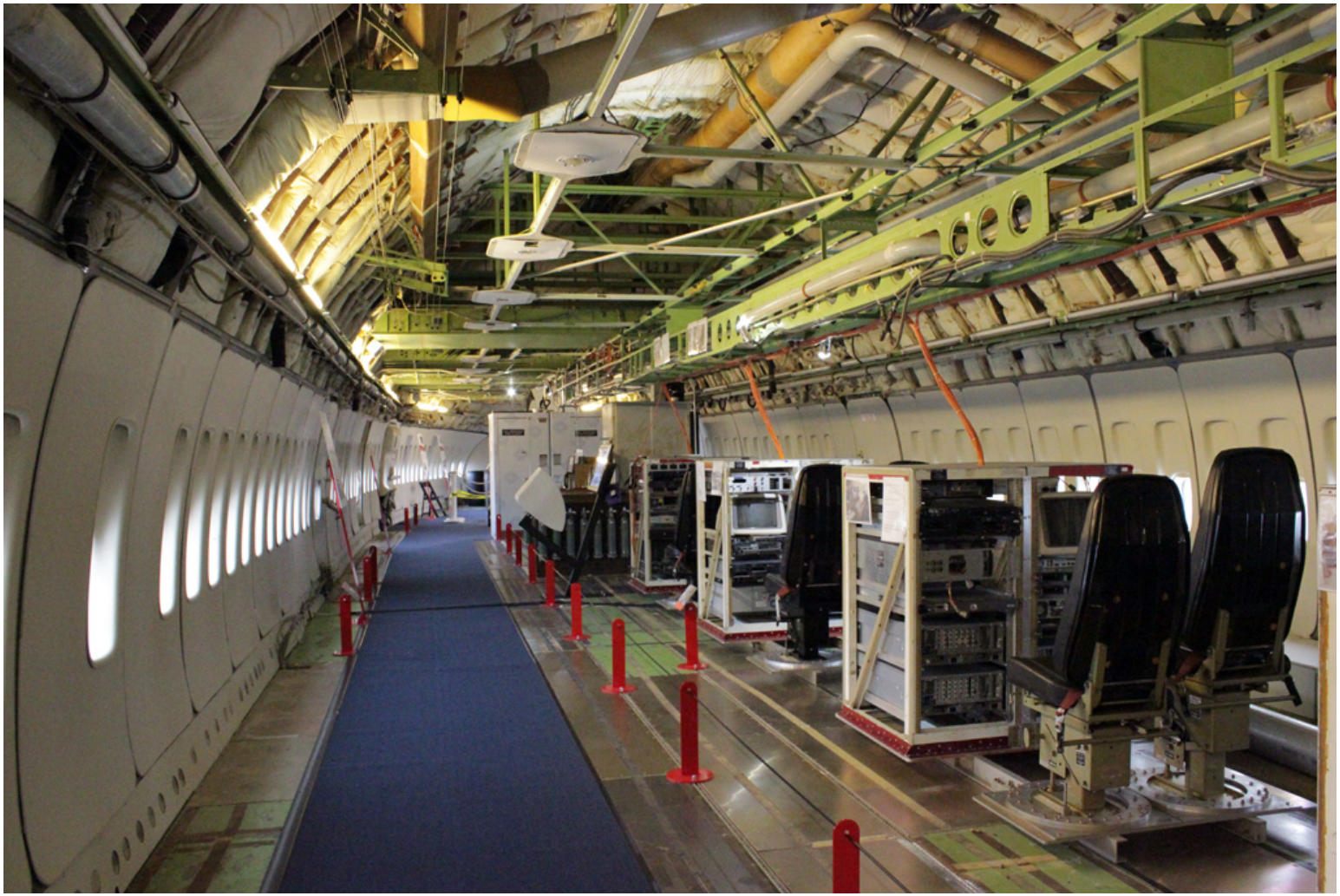
Suspension Bridge

Skyscraper



Tower

Airplane



Airplane Fuselage

What is a structure?

Construction or framework of identifiable elements (components, members, parts, etc.) that gives form and stability, and resists stresses and strains.

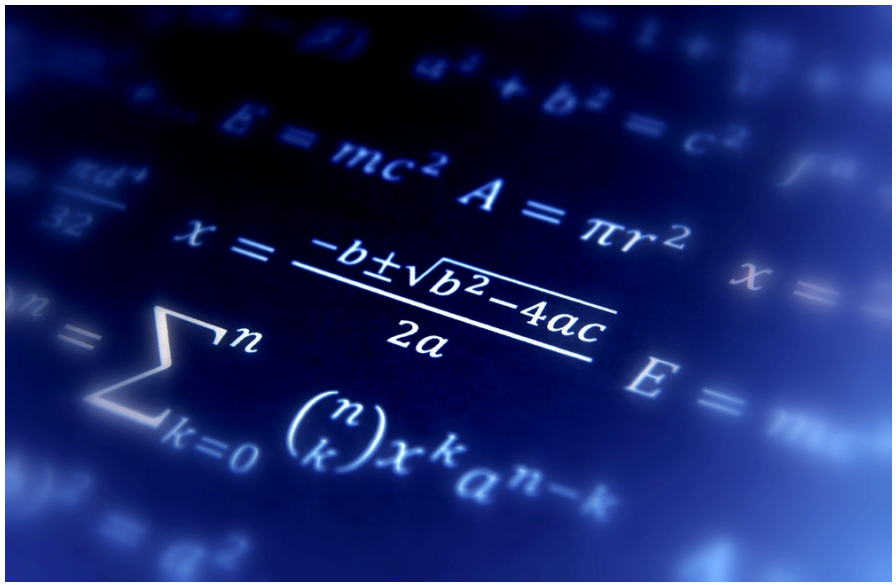
Active learning exercise:

Get out a scratch sheet of paper and in ***2 minutes*** write down as many examples of structures you can think of.

Stop when I clap!

Street sign

What is analysis?

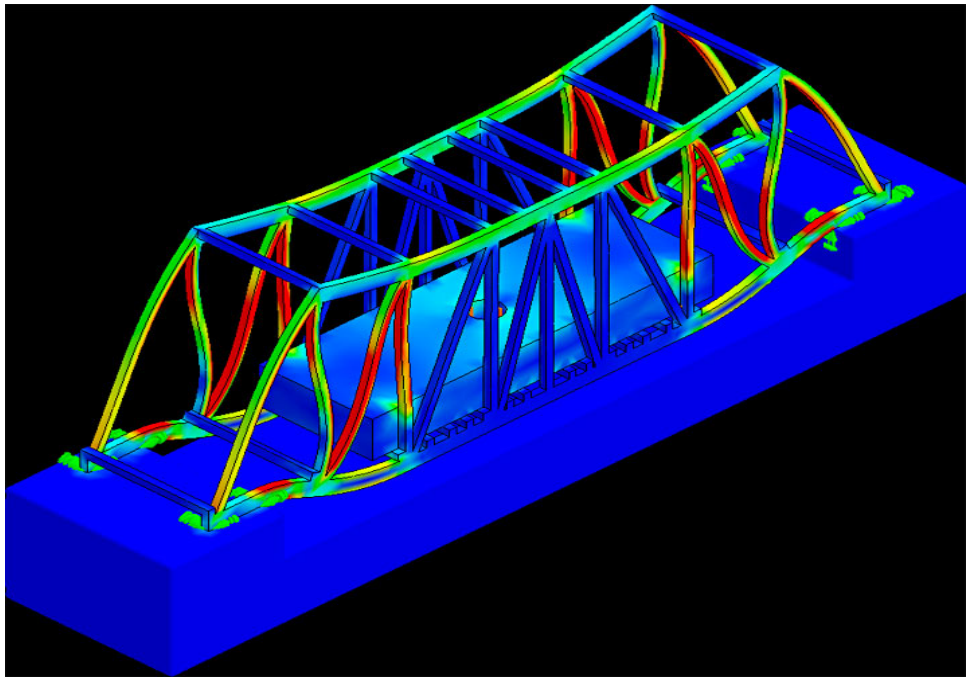


What is analysis?

A systematic examination and evaluation of data or information, by breaking it into its component parts to uncover their interrelationships.

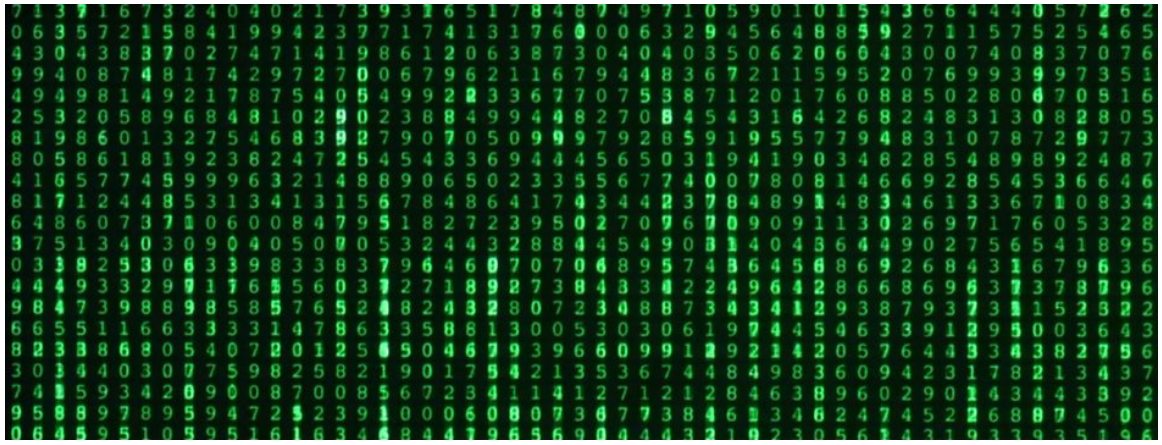
Structural Analysis

The systematic evaluation of the effects of loads on physical structures and their components.



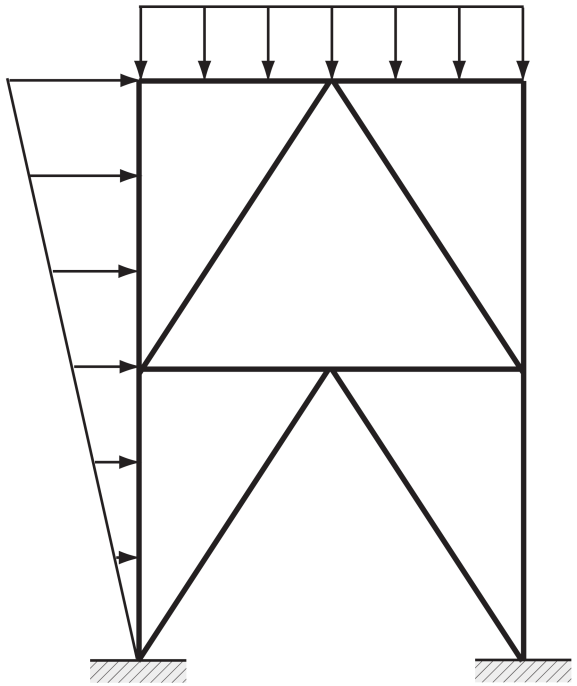
In this course:

You will learn how to develop mathematical models of real-world structures and analyze them using the "Matrix Displacement Method (MDM)" to determine the force distribution, deflections, and strain/stresses on 1-D and 2-D systems.



By the semester's end:

The goal is that you will ALL be able to readily apply techniques developed in class to analyze a structure such as the one given below:



Next Class:

Statics review - Part I

Equilibrium $\sum F_x = F_y = 0$ $\sum M_z = 0$

External reactions at supports

Internal reactions at hinge