The class will concentrate on the role of engineers, particularly structural engineers, in the design process for buildings, on advances in the use of various structural materials, on how these advances find their way into design and construction and the effects of building codes on innovation. The class will include the presentation of material as well as significant give and take discussion. The first class session will be devoted to determining what the specific interests of class members are and how those interests can be addressed in the class. Topics that will be covered include:

- What can/should the role of the architect, consulting engineers, general contractor, material suppliers and sub-contractors be? At what point should each become involved in the design process?
- What are the differences between design-bid-build and design-build projects? How does each encourage or discourage innovation?
- How have building codes evolved? How do they encourage or limit innovation?
- Structural building materials:
  - Concrete
  - Structural Steel
  - Timber
  - Light Gage Steel
  - Masonry
  - Aluminum
  - Composite Materials
  - Other Materials
- How does the selection of lateral seismic and wind loading systems occur? How can these systems compromise the work of other members of the design team?
- What is performance based design and what opportunities does it present?
- What is the structural engineer’s role in the design of “non-structural” elements or portions of the structure that are not part of the “primary structural system”? What design responsibilities can be reasonably delegated to the contractor?
- How does renovation of existing buildings differ from new construction?
- How has BIM affected how designs are produced?
- Other topics of special interest to the class.

There will be weekly homework problems that can be done individually or in groups. There will be little if any numerical design discussions but there will be problems regarding the detailing of structural items that are often designed by architects and how innovative design solutions might be developed. Student’s solutions to the problems will often be discussed in class as both good and not-so-good ideas. No textbooks will be required, but information from the International Building Code and to the codes it in turn references will often be referred to.