

BSCI 7146: Structural Systems of Building

Fall 2017

Course Syllabus

Instructor: Michael Hein

Tel: 334-844-4518

cell: 334-467-3113

email: heinsight@auburn.edu

Course Syllabus

Overview

The purpose of this course is to gain a conceptual understanding of the behavior of structural systems using great works of engineering and architecture, as well as the temporary structural systems used to build them. Through lectures, readings, observation, and conceptual analysis we will explore the various forces (social, and cultural as well as physical) that helped shape great structures. In addition, we will research some of the catastrophic failures that have occurred involving significant structures, and the role engineering and construction might have played in causing or preventing these failures. We will seek to find the influence construction systems and processes have had in shaping great works of the built environment. Finally, we will investigate emerging engineering and construction trends in support of the advanced, sophisticated structures being planned and built today.

Required Text (Video)

Understanding The World's Greatest Structures: Science and Innovation from Antiquity to Modernity, Professor Stephen Ressler, PhD. This is a DVD lecture series, which is part of The Great Courses by The Teaching Company, 2011. Video DVD will be given to each student at the start of classes.

Learning Outcomes

Upon completion of this course, students should have attained:

- Ability to identify major structural systems that support a variety of buildings, towers, bridges, and enclosures.
- Ability to identify primary sources of loading on structures and trace the path of resulting internal forces through the components of the structural system.
- Ability to build simple physical and/or digital graphic models that assist in understanding and communicating structural behavior of a variety of structural systems.
- Ability to identify construction innovations and resources that have made great structural works possible.
- Ability to identify the principal causes of significant historical structural failures.
- Ability to identify some construction contributions to the causes and prevention of structural failures.

- Ability to communicate the behavior of structural systems in written, verbal, and visual forms.
- Ability to research the structural system(s) of a great structure and communicate historical, cultural, and technical forces that helped shape it.
- Ability to research and discover construction contributions to structural innovation.

Course Procedure

To start the semester, class will meet live in the Gorrie Center at Auburn University for 16 hours over a four-day period. Classes will consist of:

- Guest Lectures (from course DVD)
- Supplementary presentations by instructor
- Q&A discussion

Online Course Component

Following our initial four meetings on campus, we will meet remotely via Web-Ex weekly on Tuesdays 6:00-7:00 pm (CDT). Class will consist of review and discussion of key points of assignments, and coverage by instructor of supplementary materials.

Reading/Viewing

- Assigned viewing from course DVD – 1-2 Lectures per week.
- Optional readings: See bibliography on course website
- Online Videos

Assignments

Weekly assignments on the viewing materials will be posted on this CANVAS course website. Solutions should be attached in response to the assignments on the date they are due. Assignments will be graded online ASAP by instructor.

- Research - INTERNET/Library/other
- Videos
- Modeling – physical, computer
- Presentations

Research Report

Research and report on one of the following:

- Great structure
- Significant structural system
- Significant construction structural system
- Structural Failure of one of the above

Emphasis should be placed on engineering and construction innovation and resources that helped to make the structure or system possible.

More detail on the report requirements is provided on the Pages link of the CANVAS course website.

Participation

What you learn from the course will be proportional to what you invest, i.e. your preparation, attitude, and engagement. You are expected to attend all lectures and submit all assignment solutions on time. Please notify your instructor via CANVAS email if you have any issue that prevents you from attending a class session or submitting your assignment solution on time. Instructor will call on students during the lectures to encourage participation.

Communication

The official form of communication in this course outside of class will be through the course CANVAS website. Check the website, calendar and announcements frequently for schedule changes. Assignments and tests will be administered on the CANVAS course website. Please utilize the CANVAS email to bring proper attention and response to your questions and comments.

Course Components and Grading

- Homework Assignments - 20%
- Test T1 – 20%
- Test T2 - 20%
- Test T3 – 20%
- Research Report and Presentation - 20%

Course Schedule

See CANVAS Course schedule for lecture topics, and assignment and quiz due dates.