ARC 541: Architectural Systems + the Environment

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Office Hours    10:00 am – 10:45 am, MWF, Central US Time
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Course Description
Seminar devoted to the teaching, investigation, and discussion of technology and its impact upon contemporary architecture. Students have the opportunity to investigate significant technological trends and systems and to discover applications and opportunities in architectural studies. Corequisite: Enrollment in ARC 551.

Course Objectives
Upon completion of this course, the student will be able to:

1. Review significant technological architectural and design process concepts.
2. Discuss and relate these ideas to contemporary architectural practice.
3. Develop understanding of how these ideas affect personal design goals and practice.
4. Conceptualize the interrelationships of architectural design and technological form.
5. Develop an understanding of zoning and building code applications to technological form.
6. Apply concepts of life safety to design.
7. Develop preliminary structural systems and integrate them into a design.
8. Develop an understanding of mechanical, electrical, and plumbing systems as well as fire protection applications to technological form.
9. Summarize specifications and construction estimating concepts into a design.

Textbooks
No text is required for this course.

Recommended texts include:


ARC 541: Architectural Systems + the Environment

Expectations
A. Students are expected to actively participate in the class by asking and answering questions, exploring solutions by discussing notes, concepts, and ideas using online methods provided by Desire2Learn.
B. Students are expected to submit all work on time in the manner prescribed by the project.
C. Unless work is assigned as a team project, each student shall do her or his own work. The SIU Student Conduct Code contains provisions regarding acts of academic dishonesty. See SIU Student Regulations and Policies for all university policies regarding students.

Coursework
A. Modules: ARC 541 online consists of learning modules. Each module consists of lecture activities available on-demand through the class web site and an assignment completed in conjunction with the design project being completed in ARC 551: Comprehensive Studio.
B. Discussion Threads: ARC 541 will require that students complete discussion with each other using the discussion threads in Desire2Learn. Discussions held via other online means will not satisfy this learning activity requirement.
C. Online Office Appointments: Students may schedule an online office appointment with the instructor as needed to discuss class requirements, projects, and other topics.
D. Projects: Each week consists of completing a set of panels related to the student’s project in ARC 551 and submitted online through Desire2Learn (unless an alternate means of submission is required by class). Work must be submitted in the format required and in Desire2Learn except when an alternate means of submission is used.

NAAB Student Performance Criteria
ARC 541 fulfills a number of the Student Performance Criteria as defined by the National Architectural Accrediting Board. Students are encouraged to view the 2009 Conditions for Accreditation.

NAAB criteria encompass two levels of accomplishment:
- **Understanding**—The capacity to classify, compare, summarize, explain and/or interpret information.
- **Ability**—Proficiency in using specific information to accomplish a task, correctly selecting the appropriate information, and accurately applying it to the solution of a specific problem, while also distinguishing the effects of its implementation.

A.4 Technical Documentation: Ability to make technically clear drawings, write outline specifications, and prepare models illustrating and identifying the assembly of materials, systems, and components appropriate for a building design.
B.2 Accessibility: Ability to design sites, facilities, and systems to provide independent and integrated use by individuals with physical (including mobility), sensory, and cognitive disabilities.
B.3 Sustainability: Ability to design projects that optimize, conserve, or reuse natural and built resources, provide healthful environments for occupants/users, and reduce the environmental impacts of building construction and operations on future generations through means such as carbon-neutral design, bioclimatic design, and energy efficiency.
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B.5  Life Safety: Ability to apply the basic principles of life-safety systems with an emphasis on egress.

B.6  Comprehensive Design: Ability to produce a comprehensive architectural project that demonstrates each student’s capacity to make design decisions across scales while integrating the following SPC:

A.2. Design Thinking Skills  B.2. Accessibility
A.5. Investigative Skills  B.4. Site Design
A.9. Historical Traditions and Global Culture  B.8. Environmental Systems
B.9. Structural Systems

B.8  Environmental Systems: Understanding the principles of environmental systems’ design such as embodied energy, active and passive heating and cooling, indoor air quality, solar orientation, daylighting and artificial illumination, and acoustics; including the use of appropriate performance assessment tools.

B.9  Structural Systems: Understanding of the basic principles of structural behavior in withstanding gravity and lateral forces and the evolution, range, and appropriate application of contemporary structural systems.

B.10  Building Envelope Systems: Understanding of the basic principles involved in the appropriate application of building envelope systems and associated assemblies relative to fundamental performance, aesthetics, moisture transfer, durability, and energy and material resources.

B.11  Building Service Systems: Understanding of the basic principles and appropriate application and performance of building service systems such as plumbing, electrical, vertical transportation, security, and fire protection systems.

B.12  Building Materials and Assemblies: Understanding of the basic principles utilized in the appropriate selection of construction materials, products, components, and assemblies, based on their inherent characteristics and performance, including their environmental impact and reuse.

Grading Policies
Projects must be received at the time they are due and in the form required by the project. Work must be submitted in Desire2Learn unless another means of submission is required.

There are eight panel sets required in this course. Each counts as 100 points. In addition, the eight panel sets are submitted as one complete PDF booklet that is evaluated for another 200 points. Thus, the total points available in the course will be 1000.

Grade Scale (Based on Percentages):

A = 90-100, B = 80-89, C = 70-79, D = 60-69, and F = 59 and below

Course Schedule
The suggested course schedule is integrated into the Calendar feature in D2L. The main screen for this course in D2L also shows the daily schedule on the right side.
Other Information

Please see files and links found in Course Documents for other university policies, procedures, and services available to students.

There are no exams in this course. Understanding of the material is demonstrated through projects completed in class. Self-assessments are provided with each lecture. Students must complete all self-assessments as required elements of the course but the score achieved is not counted as part of your grade.