The University of Texas at Austin **Spring 2019**
Architectural Engineering **CAEE**

Course: **ARE 465 (Integrated Design Project)**
Unique Number 15020

Description: The work product will consist of the engineering design of a low-rise building (structural, environmental, and construction engineering disciplines), a written report on building system selection, preparation of construction documents, and presentation of final work product. Class time is six hours a week for one semester.

The primary component of ARE 465 is the engineering design of a building by teams of students. Architectural plans and elevations are provided and the teams select the engineering systems and produce a final set of engineered drawings, a written report of the decisions leading to the system selections, including regarding sustainability issues, outline specifications, and a cost estimate and construction schedule for the overall project.

The function of the teams and final work product are designed to replicate real-world situations as closely as possible. Students are assigned to teams of 6-9 persons based on experience and ability as identified in their resumes and the team members self-assign two or three members to each engineering discipline. The team members work together to produce a single, integrated design. The team members are expected to provide support to each other, rather than merely divide up the work, and on most assignments all members of each discipline receive the same grade. Grading will reflect both the quality of the work of each discipline and the quality of the integration between the disciplines.

Intermediate submittals at the conceptual design, schematic design, design development and construction documents stages will be made as the semester progresses, with the final work product due at the end of the semester. The students then give an oral and graphical presentation of their designs using PowerPoint to an audience of professors, professional engineers and contractors. The final grade will factor in all of the submittals, weekly meeting minutes, and the relative contribution of each team member, with the greatest weight given to the final design and report submission.

This course carries the Independent Inquiry flag. Independent Inquiry courses are designed to engage you in the process of inquiry over the course of a semester, providing you with the opportunity for independent investigation of a question, problem, or project related to your major. You should therefore expect a substantial portion of your grade to come from the independent investigation and presentation of your own work.

Prerequisites: ARE 217 (Computer-Aided Design & Graphics)
320L (Introduction to Design II)
335 (Materials and Methods of Building Construction)
346N (Building Environmental Systems)
Credit or Registration for CE 357 (Geotechnical Engineering), CE 331 (Reinforced Concrete Design) or 335 (Elements of Steel Design)

Lecturer: Wesley Stidham, PE
ECJ, Rm. 5.440
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Teaching Asst. TBA

Meetings: Room ECJ 3.106; 3:00 p.m. - 6:00 p.m., Monday and Wednesday

Office Hours: Lecturer and TA: By appointment only

Course Objectives & Academic/Learning Goals:

To provide seniors in Architectural Engineering with:

1) an ability to apply advanced engineering concepts previously learned in the context of a single, comprehensive project;
2) an ability to research and apply an extensive amount of technical knowledge regarding the application of engineering design principles to real world building design problems;
3) an understanding of how to coordinate the elements of different architectural engineering systems;
4) an understanding of economic, environmental, social, political, ethical, health and safety, constructability, and sustainability constraints in the design process;
4) an ability to function within a structured team atmosphere on a single project over an extended period of time; and
5) an awareness of the importance of mutual accountability and self-discipline in the work environment.

Textbook: None

Topics:

1.	Course Intro & Design Process	2.5 wk
2.	Teamwork & Project Planning	0.5 wk
3.	Sustainable Design	0.5 wk
4.	Construction Engineering	0.5 wk
5.	Structural Analysis & Design	2.0 wk
6.	Mechanical System Design	0.5 wk
7.	Cost Estimating & Scheduling	0.5 wk
8.	Ethics & Legal Issues in Engineering	0.5 wk
9.	Presentation Techniques	0.5 wk
10.	Report/Design Preparation	5.0 wk
11.	Report/Design Presentation	1.0 wk
		14.0 wk

Grading Scale: This class will graded on a +/- system, converting letter grades to the 4 point scale. Grade cutoffs may be shifted downward at the instructor's discretion.

A	4.0		B-	2.67		D+	1.33
A-	3.67		C+	2.33		D	1.0
B+	3.33		C	2.0		D-	0.67
B	3.0		C-	1.67		F	0.0

Grading:

Assignment		Earliest Due Date
Schematic Design	10%	02/17/16
Design Development	20%	03/23/16
Final Design Documents	50%	04/27/16
Final Presentation	10%	
Attendance/Participation/Meeting Minutes	10%	
	100%	

Assignments are due at 3:00 p.m. and are late at 3:15 p.m. Late assignments may be marked down

10%. Roll may be taken and 100% attendance is expected, as it is in a business office for salaried employees.

Technical writing quality is often an issue in the grading of this course. The Undergraduate Writing Center is available to assist students whose writing skills may not rise quite to the level of their engineering skills. The UWC is located in FAC 211; appointments can be made by calling 471-6222. The UWC also maintains several websites students may find useful, including the following: http://uwc.utexas.edu/students/faq and http://projects.uwc.utexas.edu/virgil/.

The instructor's goal is to grade and return all assignments to students within one course-week from the date submitted (except the preliminary report). **Students are strongly recommended to keep a copy of all work they submit, as each assignment forms the basis for the next assignment**.

Design Studio: Note that the Design Studio hours of operation are approximately 7 a.m. to 11 p.m., Monday through Friday. Weekend hours currently are the same as for the 2nd floor computer labs.

It is the department's intention to keep the design studio clean. As such, it is the student's obligation to clean up after himself. To that end:

- no food or drink should be brought into the room;
- when cutting materials, use a cutting board to protect the drafting surface and clean up scraps;
- be sure to return reference material to its designated location.

Remember, this lab is used by several classes, and lack of common courtesy by a few individuals affects many others. Students not adhering to this policy will have their class grades adjusted downward.

Computer Usage: This course requires computer usage for word processing, spreadsheets, PowerPoint presentations, project scheduling, on-line research, and CAD/BIM drafting. Computers may be found in ECJ 5.408, the library and the computer labs on the 3rd floor in ECJ.

Personal Issues: **If any student has an illness or personal problem that will affect his/her performance during the course of the semester, he/she must let the instructor know as soon as possible.** Do not hesitate to use the cell phone number and email address listed.

Accommodations: The University of Texas at Austin provides, upon request, appropriate academic accommodations for qualified students with disabilities. For more information, contact the Division of Diversity and Community Engagement, Services for Students with Disabilities, 471-6259 (voice) or 232-2937 (video phone) or http://www.utexas.edu/diversity/ddce/ssd.

Scholastic Dishonesty:
Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since such dishonesty harms the individual, all students, and the integrity of the University, policies on scholastic dishonesty will be strictly enforced. For further information, visit the Student Judicial Services web site http://deanofstudents.utexas.edu/sjs/.

Student Privacy:
Web-based, password-protected class sites will be associated with all academic courses taught at the University. Syllabi, handouts, assignments and other resources are types of information that may be available within these sites. Site activities could include exchanging e-mail, engaging in class discussions and chats, and exchanging files. In addition, electronic class rosters will be a component of the sites. Students who do not want their names included in these electronic class rosters must restrict their directory information in the Office of the Registrar, Main Building, Room 1. For information on restricting directory information, see the General Information Catalog or go to: http://registrar.utexas.edu/catalogs/gi08-09/app/gi08.appc02.html#chapter-9-educational-records.

Evaluation:
Each student will be given the opportunity to evaluate the course using the standard course/instructor evaluation form during the last week of classes. Students are strongly encouraged to include relevant comments in their evaluation, both good and bad.

Drop Policy:

From the 1st through the 12th class day, an undergraduate student can drop a course via the web and receive a refund, if eligible. From the 13th through the university's academic drop deadline, a student may Q drop a course with approval from the Dean, and departmental advisor. After the academic drop deadline has passed, a student may drop a course only with Dean's approval, and only for urgent, substantiated, non-academic reasons..