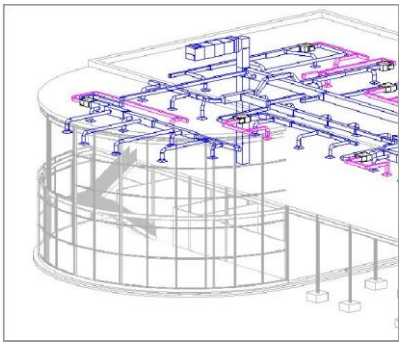
ARE217 COMPUTER-AIDED DESIGN & GRAPHICS **14950**


Professor: 14950 (TTh) Tomas Rodriguez, P.E., CFM | tomasito@utexas.edu | ECJ 5.434 (by appt.)

TA: TBA

What are the goals of this course?

ARE 217 will improve your skill in visual communication and introduce you to different types of drawings, such as orthographic projections, axonometric views, and 1, 2, and 3-point perspectives. Some of you may have taken drafting in high school and are familiar with measured drawings such as plans and elevations, while for others it may be your first exposure to this drawing type. The structure of the course is intended to foster collaboration, where more experienced students can be a resource for those new to the concepts covered in class.

What will you learn?

The course will prepare students for the Architectural Engineering design sequence by using Computer Aided Drafting and Design (CADD) tools such as AutoCAD, Revit, and Sketchup. AutoCAD is the industry standard CADD software application, Sketchup provides an introduction to 3D modeling concepts, and Revit will introduce you to Building Information Modeling (BIM). Students will also have the opportunity to use the traditional graphics software programs Adobe Photoshop and Illustrator to explore how they can be applied to engineering. Finally, you will also learn techniques for drawing by hand in two and three dimensions. The instructor firmly believes that hand drawing is important in developing your ability to think and design spatially. As you gain more experience, the tool you choose to use to produce a design is secondary to what you can conceptualize.

Course Requirements & Information

The course will generally have a lecture session on the second class day of the week and a lab section on the first class day of the following week. Lecture and lab are both from 6:00-9:00 pm in ECJ 3.106 (unless stated otherwise for a specific lecture). You will occasionally have lectures during lab sections as well.

Exams

There are no scheduled midterm or final examinations for this course.

Prerequisites

ARE 102 Introduction to Architectural Engineering

Text & Supplies

There are no required texts for this course. Handouts will be posted on Canvas throughout the semester. We suggest that you purchase Francis Ching's *Building Construction Illustrated* (5th edition), as it is required for future courses in the ARE design sequence.

The following supplies are required:

- A USB Flash Drive for file backups (optional)
- Sketch book
- B or 2B pencils, eraser and ruler
- Architectural and Engineering scales

Evaluation

An evaluation of the course and instructor will be conducted at the end of the semester using the approved UT Course/Instructor evaluation forms.

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/conduct/

Important Note-Students with Disabilities

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, 512-471-6259 (Videophone: 512-410-6644) or http://diversity.utexas.edu/disability/

Grading

The +/- grading system will be used for calculation of final grades.

Attendance & Participation (15%)

Since this is a two-credit hour course scheduled for six hours of instruction, it is my intention that you spend little if any time outside of class and lab to complete the assignments. However, I do expect you to attend lectures and labs. Attendance is worth 15% of your final grade; attendance will be taken and each unexcused absence from class or lab will subtract 10% from your attendance grade (i.e. 1.5 points off your overall class grade). If you have to miss a class for personal reasons or have a conflict such as an evening exam, you **must** notify the instructor (me) and the TA *via email or through the messaging system* on Canvas as soon as possible.

Quizzes (15%)

You will have quizzes in the lab section to reinforce key concepts from the lectures.

Classroom Assignments (35%)

Throughout the semester you will be given an assignment in lecture, then have the remainder of lecture plus three hours of lab the following week to work on it. Assignments will be due *at the end of lab*, and should be turned in even if not 100% complete. It is important that you keep up, because the next lecture will bring a new concept and new assignment. Most will be submitted electronically via Canvas, but occasionally we may ask that you print an assignment and submit it in paper form. Assignments turned in late will be docked two letter grades per week. Any problems, personal or otherwise, affecting grades should be brought to the instructor's attention as soon as possible.

Final Project (35%)

Much of the second half of the semester will be spent working on the design of a two-story office building. Each student will design the architectural layout, structural layout, mechanical layout, and site layout for a building. On the last class day, students will give a presentation of their building designs.

Class Drop Policy

Undergraduate Students:

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.

Graduate Students:

From the 1st through the 4th class day, graduate students can drop a course via the web and receive a refund. During the 5th through 12th class day, graduate students must initiate drops in the department that offers the course and receive a refund. After the 12th class day, no refund is given. No class can be added after the 12th class day. From the 13th through the 20th class day, an automatic Q is assigned with approval from the Graduate Advisor and the Graduate Dean. From the 21st class day through the last class day, graduate students can drop a class with permission from the instructor, Graduate Advisor, and the Graduate Dean. Students with 20-hr/week GRA/TA appointment or a fellowship may not drop below 9 hours.

Important Dates

Jan 22	**Classes begin.**
Jan 25	**Last day of the official add/drop period**; after this date, changes in registration require the approval of the department chair and usually the student's dean. (See General Information, chapter 4, for details.) Last day undergraduate students may register and pay tuition without the approval of the registrar. Last day graduate students may register and pay tuition without the approval of the graduate dean.
Feb 6	**Twelfth class day**; this is the date the official enrollment count is taken. Last day an undergraduate student may add a course except for rare and extenuating circumstances. Payment for added classes (add bill) due by 5pm. Last day to drop a course for a possible refund. (See General Information, chapter 4, for details.)
Feb 22	Second tuition installment payment due for students who selected the installment plan.
Mar 18-23	Spring Break
Mar 29	Final tuition payment due for students who selected the installment plan.
Apr 17-19, 22-26	**Academic advising** for continuing and readmitted students for the spring semester.
Apr 8	Last day an undergraduate student may, with the dean's approval, withdraw from the University or drop a course except for urgent and substantiated, nonacademic reasons; Last day a student may change registration in a course to or from a pass/fail basis; Last day to apply for an undergraduate degree; Last day an undergraduate student may register in absentia.
Apr 22-May 3	**Daily registration** for the spring semester for continuing and readmitted students.
Nov 13	Tuition bills for the summer semester distributed to students electronically.
May 10	**Last day of classes.**
May 15-18, 20-21	Spring semester **final examinations**.

Class Outline

		Drawing Concepts	CAD Concepts	Assignment	Assignment Due
Tuesday	1/22				
Thursday	1/24	Orthographic Projections: Plan, Section, Elevation	Intro to CAD: Menus & Toolbars, Command Line, Units & Grids, Basic Drawing Tools, Element Placement & Manipulation,Paperspace, Units, Scale and Printing	Assignment 1: Geometric Constructions I, Plan / Sxn / Elevation of classroom by hand and in CAD	

Tuesday	1/29				Assignment 1
Thursday	1/31	Paraline Drawings: Axonometric drawings	Snaps, Explode, Trim, Mirror, Text, Modify, Plot from Model, Layers, Hatching & Fills, Arrays, Join Plines, Element Attributes	Assignment 2: Geometric Constructions II, Paraline Drawings	
Tuesday	2/5				Assignment 2
Thursday	2/7	Golden Ratio / Golden Section	Layers, Hatching & Fills	Assignment 3: Geometric Constructions III (golden section, Pantheon)	
Tuesday	2/12				Assignment 3
Thursday	2/14	Perspective Drawing: 1, 2, and 3 point perspective		Assignment 4: Perspective Drawing Sequence, in-class perspective drawings, 3 radicals	
Tuesday	2/19				Assignment 4
Thursday	2/21	Sketchup: Introduction	Primitives, Push-Pull, Groups, Components, inference/lock inference, set axes, Import site aerial and topo into Sketchup	Assignment 5: Sketchup massing model of radical on site	
Tuesday	2/26				Assignment 5
Thursday	2/28	Revit: introduction to BIM, program for assignment	Architectural Design: plans, levels, sections, walls and floors, trim, adjusting dimensions, leveling	Assignment 6: Draft Architectural Layout of L1 and L2	
Tuesday	3/5	Revit: roofs, stairs, curtain walls			Assignment 6
Thursday	3/7	Revit: Structural component-Framing System	Structural Design: reference in Arch model, column grid, girders, beams, joists	Assignment 7: Draft Structural Layout	
Tuesday	3/12				Assignment 7
Thursday	3/14	Revit: Mechanical Component	Mechanical Design: AHU, VAV, terminals, ducts, fitting	Assignment 8: Draft Mechanical Layout	
Tuesday	3/19	Spring Break			
Thursday	3/21				

Tuesday	3/26				Assignment 8
Thursday	3/28	Photoshop-Intro: Layers, Masks, Clone Tool		Assignment 9: Photoshop Intro Assignment	
Tuesday	4/2				Assignment 9
Thursday	4/4	Photoshop: Rendering	Materials and Lighting in Revit	Assignment 10: Draft of Rendering	
Tuesday	4/9				Assignment 10
Thursday	4/11	Illustrator: Introduction	Vector vs Raster, Stroke, Fill, Text	Assignment 11: Firm Logo	
Tuesday	4/16				Assignment 11
Thursday	4/18	AutoCAD: Section Detail	CAD Sheet Standards	Assignment 12: Draft Architectural, Structural, and Mechanical Sheets	
Tuesday	4/23				Assignment 12
Thursday	4/25	AutoCAD: Site Plan, ROW, Bearings and Distances, Stormwater runoff/Detention and WQ ponds	Surveyor's Units in AutoCAD	Assignment 13: Site Plan in AutoCAD	
Tuesday	4/30				Assignment 13
Thursday	5/2	Course Instructor Evaluations and Closing, Peer Review/Presentation?		Work on Presentations	
Tuesday	5/9	Final Presentations			
Thursday	5/11				