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ENTC 2160: Architectural CAD

2022

Syllabus: Architectural CAD [ENTC 2160]

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Syllabus Architectural CAD

Course Title: Architectural CAD

Semester Hours: 3

Date of Syllabus January 15, 2023

Instructors: Keith V. Johnson, Ph.D.
Mohammad Moin Uddin, Ph.D., P.E.

Study Materials: Freely available in Digital Commons @ East Tennessee State University

For your convenience, it is recommended that you download the “Free” Architectural Software to use outside of classtime when you are unable to come to campus. The site to visit is <http://students.autodesk.com/> and follow instructions.

I. Catalog Description:

Architectural CAD: (3 hours) – **Technology Intensive:** An introduction to the principles of architectural computer aided drafting on a microcomputer. Lecture and laboratory.

II. Course Objectives

Upon completion of this course of study the student should will be able to:

1. Employ productivity / Computer Aided Design software to solve technical Problems.
2. Manipulate 2D and 3D CAD models.
3. Create 2D working drawings from 3D models.
4. Distinguish differences and simularaties between the basic relationships of residential and construction commercial plans and use CAD applications to design and evaluate those relationships.
5. Analyze residential and commercial floor plans for design flaws and redesign or reverse engineer a better plan using CAD tools and develop a justification and defense for decisions made.

III. Course Topics

- 1.0 Introduction
 - 1.1 Scope of course and expectations
 - 1.2 Lab policies
 - 1.3 CAD, CADD definitions
 - 1.4 Overview and demonstration of the software applications
- 2.0 Basic Floor Plan
 - 2.1 Manipulating walls
 - 2.2 Installing doors and windows
 - 2.3 Room concepts and relationships
 - 2.4 Elements of good design
- 3.0 Models as compared to drawings
 - 3.1 Views - 2D and 3D
 - 3.2 Purpose of Models
- 4.0 Creation of 2D views of 3D models
- 5.0 Altering and determining properties and characteristics
- 6.0 Dimensioning, schedules and notation
 - 6.1 Color, style, and line weight
 - 6.2 Levels or layers
 - 6.3 Measuring methods
- 7.0 Green Design
- 8.0 Site Planning
- 9.0 Details and Sections
- 10.0 Symbols and templates
- 11.0 3D modeling and presentation

IV. Class Activities:

- A. Lecture
- B. Discussion
- C. Individual Lab activities and presentations

Note: There will be quizzes given unannounced throughout the semester. (No Make-ups)

V. Course Assessment

Final evaluation of students enrolled in this course will be based on the following criteria:

- A. Lab Assignments 15%
- B. Tests 15%

- C. Major Project 35%
- D. “Pop” Quizzes 15%
- E. Final Exam 20%

VI. Grade Scale

Final grades will be given according to the following scale:

Percentage	Letter	Percentage	Letter
93-100	A	73-76	C
90-92	A-	70-72	C-
87-89	B+	67-69	D+
83-86	B	63-66	D
80-82	B-	Below 63	F
77-79	C+		

- A = Exceptional work: conceptually appropriate, demonstrates strong creative thought, precisely executed, instructions followed to the letter, professional or near-professional quality work, and turned in on time.
- B = Work executed with few errors, conceptually appropriate, demonstrates good creative thought, and turned in on time.
- C = Average work, meets minimum requirements.
- D = Below average work, “sloppy”, instructions not followed, and work shows a lack of understanding or a lack of application of material covered in class.
- F = Failed to meet minimum requirements of the problem.

VII. Academic Misconduct:

ETSU Policy No. 3.13, October 1, 1979.

All students in attendance at East Tennessee State University are expected to be honorable. Academic Misconduct will be subject to disciplinary action. Any act of dishonesty in academic work constitutes academic misconduct. This plagiarism, the changing or falsifying of any academic documents or materials, cheating, and the giving or receiving of unauthorized aid in test, examinations, or other assigned school work. Penalties for academic misconduct will vary with the seriousness of the offense and any may include, but not limited to: a grade of “F” on the work in question; a grade of “F” for the course; reprimand, probation, suspension, and expulsion. For a second academic offense the penalty is permanent expulsion.

VIII. Attendance Policy:

Class attendance is a contract between faculty and students. It is expected that a student will attend class regularly and provide a valid reason for any absence. Attendance will be taken during each class meeting at the beginning, middle, or at the end of class. Assignments and exams can not be made up unless valid documentation (evidence) for the absence is presented to the professor. Oral presentations will not be made up. This class requires a strict attendance policy. Unexcused absences will affect your final grade.

Attendance is very important as is coming to class on time. The attendance policy for ETSU is stated in your catalog under academic regulations. It requires that each instructor clearly state his/her attendance policies at the first meeting.

Attendance is required. Penalties for unexcused absences apply to your semester average (final grade). A student is allowed to miss two (2) classes without detracting from the student's final grade. Upon the third (3) absence, the student will suffer a full letter grade deduction on the final grade, unless the student provides a written excuse (which will be verified by the instructor). Upon the sixth (6) unexcused absence, the student will fail the course, regardless of the situation or their performance at said time. (see next page for definition of "excused" v/s "unexcused"). Each tardy counts as ½ absence. It is your responsibility to inform the instructor. E-mail is the best method to inform me.

What is an excused absence? There are two standard types:

- Type 1: You know ahead of time that, for good reason, you will have to miss class. You see me before the day of the absence and negotiate an excused absence, generally with some kind of appropriate written documentation.
- Type 2: Some emergency prevents you from getting to class. In this case, it's vital that you present some formal documentation that you had good reason to be gone--e.g., verification from an ETSU official that you were off campus on university business, or a written memo from a doctor, a cop, or other responsible party indicating that you were unable to make it to class for good reason.

Being tardy (more than 15 minutes late) three times will count as an absence. It is inconsiderate for you to interrupt the class by arriving late. If you have a legitimate reason for missing class, please let the instructor know in advanced so that he/she can arrange for you to get the work and /or assignments that you miss. You should save your 'free cuts' for sickness, emergencies, work related trips, etc. **All** absences, including excused absences, may be counted in the above calculations.

Special Note: If you carry a cell phone or pager, please turn them on the vibrate mode or turn them off during class because when they ring they can be very distracting.

Important Websites: Please go to the following web sites and read the posted policies which are significant to this course:

Syllabus Attachments: <http://www.etsu.edu/reg/academics/syllabus.aspx>

Disability Services: <http://www.etsu.edu/students/disable/>

Academic Calendar: <http://www.etsu.edu/etsu/academicdates.aspx>

Mental Health: Students often have questions about mental health resources, whether for themselves or a friend. There are many resources available on the ETSU Campus, including: ETSU Counseling Center (423) 439-4841; ETSU Behavioral Health & Wellness Clinic (423) 439-7777; ETSU Community Counseling Clinic: (423) 439-4187.

- If you or a friend are in immediate crisis, call 911.
- Available 24 hours per day is the National Suicide Prevention Lifeline: 1-800-273-TALK (8255).

Tentative Class Schedule

Week	Topic	Module	Assignment/Exam
1	Introduction Syllabus review	Module 01	
2	Residential Design CAD Tools Design factors Building Codes Green Constructions	Module 02	Assignment 01
3	Floor Plan Dimensions and notes Laying out Floor Plans/ second floor, etc Doors, windows (assemblies) Window and door schedule Room Relationships and sizes	Module 3A Module 3B	Exam 01
4	Electrical Plan Electical Symbols Electrical Plans Electrical schedule	Module 04	Assignment 02
5	Plumbing Plan Terms and Definitions	Module 05	Assignment 03
6	HVAC Floors / Ceilings Forced-Air Heating plans Zone Control Syatems Hot water systems Heat Pump heating and cooling cycle Duct systems	Module 06	Assignment 04
7	Wall Sections Types of sections Basics of drawing sections Fire place construction Stairs and Railings	Module 07	Midterm Exam
8	Roof Plans Types of roof plans Roof terms Roof ventilation	Module 08	Assignment 05
9	Site Plan	Module 09	Assignment 06
10 - 14	Fianl Project Assignment		
15	Final Exam		