**Advanced Computer-Aided Manufacturing**
**MCHN 2438**
**Semester and Year**

**Instructor** —

**Synonym** —

**Section Number** —

**Class Hours** —

**Office** —

**Office Hours** —

**Phone** —

**Email** —

Please contact me if you wish to meet with me outside of regular office hours or to report an excused absence.

## COURSE RATIONALE

This course will teach a combination of advanced CAD/CAM techniques as well as a study of materials and processes in which the student will encounter in the workforce. Emphasis will be placed on advanced CAD/CAM techniques as well as production oriented processes. Students will also learn the basic fundamentals of materials used in the mechanical field.

## COURSE DESCRIPTION

A study of advanced techniques in Computer-Aided Manufacturing (CAM). This advanced level class will focus on more advanced levels of manufacturing processes utilizing CNC equipment as well as the setup and operation of those machines. It will focus on CAD software used to develop 2D and 3D toolpaths to drive these machines. Emphasis on mill and lathe as well as quality control and inspection. A basic study of various materials used in the metals industry and the chemical, physical, and mechanical properties of various metals. Emphasis on manufacturing processes. CAD/CAM techniques and metrology basics will also be presented.

## PREREQUISITES

Mchn 1426 Introduction to CAD/CAM

## REQUIRED TEXTS/MATERIALS

### *Textbook*

No text required.

Machinery Handbook - **recommended**

## STUDENT LEARNING OUTCOMES

### Course-Level Student Learning Outcomes

Upon successful completion of the course, students will be able to:

- Identify various materials including, metals such as ferrous and nonferrous metals; describe the different manufacturing processes; identify by code and color the different types of metals; perform a test necessary to determine the kind of metal being used; and determine whether it is casting or forging (source WECM manual end-of-course outcome).
- Perform advanced and industry used CAD/CAM techniques and programs
- Use the lathe module of the MasterCAM as well as the tooling associated with turned parts
- Use MasterCAM to program cylindrical parts using rotary indexing also known as a CNC $4^{th}$ axis
- Learn methods associated with quality control checks and apply previously learned GD&T to real world examples
- Use and develop proper methods for the use of precision measuring equipment used in the industry
- Understand the types of tooling used in the industry
- Design, produce, and understand fixtures and their benefits
- Perform the proper setups for production oriented jobs
- Perform the proper setups for “job shop” oriented jobs
- Understand the following mechanical manufacturing processes
- Drilling
- Tapping
- Threading
- Knurling
- Grinding
- Understand Feeds and Speeds for the above processes
- Understand basic metals used in the industry
- Safely operate the laboratory CNC machinery to mill a part models from wood, plastic or metal material using the correct methods for maximum productivity, efficiency, and precision

**PROGRAM-LEVEL STUDENT LEARNING OUTCOMES**

**At the completion of the AAS degree –Mechanical Specialization - the student will be able to**:

M1. Utilize CAD software to plan and prepare documents and technical graphics appropriate to the mechanical engineering industry.

**M2.** Generate code from CAD/CAM software to operate a 3-axis CNC milling machine to manufacture a mechanical part.

**M3.** Illustrate correct usage of ASME Y14.5 and other associated mechanical standards in technical graphics of capstone projects.

**I1.** Utilize CAD software to plan and prepare documents and technical graphics appropriate to a range of design, manufacturing, and construction industries.

## SCANS COMPETENCIES

# ARCHITECTURAL & ENGINEERING CAD SCANS FIVE COMPETENCIES

| | Resources | | | | Interpersonal | | | | | | Information | | | | | | Systems | | | Technology | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Courses** | C1 Allocates Time | C2 Allocates Money | C3 Allocates Material | C4 Allocates Human Resources | C5 Participates as a Member of a Team | C6 Teaches Others | C7 Serves Clients/Customers | C8 Exercises Leadership | C9 Negotiates to Arrive at a Decision | C10 Works with Cultural Diversity | C11 Acquires & Evaluates Information | C12 Organizes & Maintain Information | C13 Interprets & Communicates Information | C14 Uses Computers to Process Information | C15 Understands Systems | C16 Monitors & Corrects Performance | C17 Improves & Designs Systems | C18 Selects Technology | C19 Applies Technology to Task | C20 Maintains & Troubleshoots Technology |
| ARCE 1452 | ✓ | | ✓ | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ |
| DFTG 1405 | ✓ | | | | ✓ | | | | | | ✓ | ✓ | ✓ | ✓ | | ✓ | | ✓ | ✓ | |
| DFTG 1413 | ✓ | | | | | ✓ | | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| DFTG 1417 | ✓ | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ |
| DFTG 1433 | ✓ | ✓ | ✓ | | ✓ | ✓ | | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| DFTG 1445 | ✓ | | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| DFTG 1458 | ✓ | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| DFTG 1475 | ✓ | | ✓ | | ✓ | | ✓ | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | |
| DFTG 1491* | ✓ | | | | | | | ✓ | | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | |
| DFTG 1493 | ✓ | | | | | | | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| DFTG 1494 | ✓ | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| DFTG 1495 | ✓ | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| DFTG 2400 | ✓ | | | | | ✓ | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ |
| DFTG 2402 | ✓ | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| DFTG 2405 | ✓ | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| DFTG 2412 | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| DFTG 2419 | ✓ | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | | | | ✓ | |
| DFTG 2421 | ✓ | | | | | ✓ | | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| DFTG 2427 | ✓ | | | | | ✓ | | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| DFTG 2428 | ✓ | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ |
| DFTG 2430 | ✓ | | | | | | | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| DFTG 2431 | ✓ | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ |
| DFTG 2432 | ✓ | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ |
| DFTG 2436 | ✓ | | | | | ✓ | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ |
| DFTG 2440 | ✓ | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| DFTG 2470 | ✓ | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| DFTG 2471 | ✓ | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| DFTG 2473 | ✓ | | | | | ✓ | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| DFTG 2474 | ✓ | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ |
| DFTG 2475 | ✓ | | | | | ✓ | | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| DFTG 2476 | ✓ | | | | | ✓ | | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| DFTG 2477 | ✓ | | | ✓ | ✓ | ✓ | | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MCHN 1419 | ✓ | | | | ✓ | ✓ | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| ENGLISH | | | | | | | | | | | | | | | | | | | | |
| MATH | | | | | | | | | | | | | | | | | | | | |
| Oral Communication | | | | | | | | | | | | | | | | | | | | |
| Arts & Humanities | | | | | | | | | | | | | | | | | | | | |
| Social Behavior & Science | | | | | | | | | | | | | | | | | | | | |

* = Capstone

# ARCHITECTURAL & ENGINEERING CAD SCANS COMPETENCIES
# FOUNDATION SKILLS

| | Basic Skills | | | | | Thinking Skills | | | | | | | Personal Qualities | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Courses** | *Reading* | *Writing* | *Arithmetic/Mathematics* | *Listening* | *Speaking* | *Creative Thinking* | *Decision Making* | *Problem Solving* | *Visualizing* | *Knowing How to Learn* | *Reasoning* | *Responsibility* | *Self-Esteem* | *Sociability* | *Self-Management* | *Integrity/Honesty* |
| ARCE 1452 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ |
| DFTG 1405 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| DFTG 1413 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| DFTG 1417 | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ |
| DFTG 1433 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| DFTG 1445 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| DFTG 1458 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| DFTG 1475 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| DFTG 1491* | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| DFTG 1493 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| DFTG 1494 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ |
| DFTG 1495 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ |
| DFTG 2400 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ |
| DFTG 2402 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ |
| DFTG 2405 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ |
| DFTG 2412 | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| DFTG 2419 | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| DFTG 2421 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| DFTG 2427 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| DFTG 2428 | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ |
| DFTG 2430 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| DFTG 2431 | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ |
| DFTG 2432 | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| DFTG 2436 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| DFTG 2440 | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| DFTG 2470 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ |
| DFTG 2471 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ |
| DFTG 2473 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| DFTG 2474 | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ |
| DFTG 2475 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| DFTG 2476 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| DFTG 2477 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MCHN 1419 | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| ENGLISH | | | | | | | | | | | | | | | | |
| MATH | | | | | | | | | | | | | | | | |
| Oral Communication | | | | | | | | | | | | | | | | |
| Arts & Humanities | | | | | | | | | | | | | | | | |
| Social Behavior & Science | | | | | | | | | | | | | | | | |

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## COURSE EVALUATION/GRADING SCHEME

Grades will be determined as follows:

- Daily Work (50%): MasterCAM tutorials, assignments, drawings, and finished machined parts. All should be complete and accurate.
- Various Projects (25%): Projects will be given during the semester and graded based on the maximum productivity, technique, efficiency, and precision of the program/part.
- Simulation Projects (25%): During the course of the semester, the student will be asked to design a project in which a production oriented CNC program must be produced, proofed, and run on a CNC milling machine center. Your grade will be based on the maximum productivity, efficiency, and precision of the program and the part produced just as it would in a "real world" manufacturing environment.

## INSTRUCTIONAL METHODOLOGY

This course is taught in the classroom in a lecture/laboratory format. The lecture will generally introduce concepts and skills, which will then be developed and applied in the laboratory.

## OPEN LABS

Hours for the open lab will coincide with the tutoring schedule which will be posted during the first week or two of the semester. **You may not be able to complete all the assignments in class**, so the open lab is one of your best opportunities to get help in finishing the lab exercises.

## COURSE OUTLINE/CALENDAR

(Note: Schedule subject to change depending on pace of course)

| | |
|---|---|
| Week 1: | Introduction and Outline. Review MasterCAM and begin discussing advanced CAD/CAM processes. |
| Week 2-4: | Advanced MasterCAM Mill tutorials and techniques. |
| Week 5-6: | MasterCAM Lathe tutorials and techniques. |
| Week 7-11: | Projects and MMP lectures. |

## COURSE/DEPARTMENTAL POLICIES

### Attendance/Class Participation

Students accruing more than two (2) UNEXCUSED absences may be withdrawn from the course at the instructor's discretion. Students may make-up absences by attending other classes. It is the student's responsibility to inform instructor when circumstances prevent him/her from attending class. An instructor may lower a student's final grade for a course due to excessive absences. **Attendance at the Midterm and Final Portfolio Reviews are mandatory—students who do not attend these reviews may be dropped from the course.**

### Cell Phones and Electronic Devices

To avoid disturbing or distracting others during class or open lab times, students are requested to conduct personal communications of any sort outside of the classrooms. For this reason, the use of cell phones and other PDA's by students is prohibited inside A&E CAD classrooms (this includes placing or receiving phone calls, text messages and emails). When conducting personal communication in the hallways, please control the volume of your voice so as not to disturb students in nearby classrooms.

### Withdrawal Policy

Course withdrawals may occur at any time after the official reporting date of a semester and up to the established deadline for withdrawals in each semester. The established deadline is listed in the course schedule and on the Web.

It is the responsibility of each student to ensure that his or her name is removed from the roll if he or she decides to withdraw from the class. The instructor does, however, reserve the right to drop a student should he or she feel it is necessary. If a student decides to withdraw, he or she should also verify that the withdrawal is submitted before the Final Withdrawal Date. The student is also strongly encouraged to retain their copy of the withdrawal form for their records.

### Initiation of Withdrawals:

Withdrawals from a course result in a grade of "W" and may be affected through action taken by either the student, the course instructor, or the instructor's immediate supervisor in the instructor's absence. Students who wish to withdraw from specific courses should initiate withdrawal procedures with the Campus Admissions and Records Office prior to the published deadline for withdrawals. Students who are not withdrawn as of the established deadline will receive a performance grade (A, B, C, D, or F). Students must present a picture I.D. to withdraw from the course.

Students who enroll for the third or subsequent time in a course taken since Fall 2002, may be charged a higher tuition rate, for that course.

State law permits students to withdraw from no more than six courses during their entire undergraduate career at Texas public colleges or universities. With certain exceptions,

all course withdrawals automatically count towards this limit.  Details regarding this policy can be found in the ACC college catalog.

**Incompletes**
The grade of "I" (for Incomplete) may be given by an instructor for a course in which a student was unable to complete all of the objectives for the passing grade. A grade of "I" cannot be carried beyond the established date in the following semester or session. The completion date is determined by the instructor, but may not be later than two weeks prior to the end of the semester. The Department Chair will approve a change from "I" to a performance grade (A, B, C, D, F) for the course prior to or at the deadline. Consideration should be given to course load and job and family obligations when carrying an "I" grade into a new semester for completion. Grades of "I" that are not resolved by the deadline will automatically be converted to a grade of "F." In extreme cases, permission may be granted to carry an "I" grade for longer than the following semester or session deadline; this must have the approval of the Dean.

**Policy on Late or Missing Work**
Instructors may impose a late penalty on work that is submitted after the assigned due date.

**Statement on Scholastic Dishonesty**
Representing the work of another person as your own work is considered scholastic dishonesty by the A&E CAD department.  Academic work submitted by students shall be the result of their own thought, research or self-expression. For purposes of this rule, academic work is defined as, but not limited to tests and quizzes, whether taken electronically or on paper; projects, either individual or group; papers; classroom presentations; and homework. When students borrow ideas, wording or organization from another source, they shall reference that information in an appropriate manner.

Reproduction or transmission of A&E CAD Departmental Check Prints in any manner (including photography and scanning) is a violation of the A&E CAD department's Scholastic Dishonesty policy.

Sharing a drawing file of a class project with another student, or representing the file of another student as your own work, is a violation of the department's Scholastic Dishonesty policy.

Violation of this policy may result in, but is not limited to, the following: reduction of the grade on the project, a grade of zero being recorded for the project, the assignment being replaced with a different project with a reduced maximum grade, the reduction of the final course grade, and in the most extreme cases, withdrawal from the course. Students accused of scholastic dishonesty will be subject to the procedures outlined in the Policies and Procedures for Academic Dishonesty section of the ACC Student Handbook.

**Student Rights and Responsibilities**
Students at the college have the rights accorded by the U.S. Constitution to freedom of speech, peaceful assembly, petition, and association. These rights carry with them the responsibility to accord the same rights to others in the college community and not to interfere with or disrupt the educational process. Opportunity for students to examine and question pertinent data and assumptions of a given discipline, guided by the evidence of scholarly research, is appropriate in a learning environment. This concept is accompanied by an equally demanding concept of responsibility on the part of the student. As willing partners in learning, students must comply with college rules and procedures.

**Statement on Students with Disabilities**
Each ACC campus offers support services for students with documented disabilities. Students with disabilities who need classroom, academic or other accommodations must request them through the Office for Students with Disabilities (OSD). Students are encouraged to request accommodations when they register for courses or at least three weeks before the start of the semester, otherwise the provision of accommodations may be delayed.

Students who have received approval for accommodations from OSD for this course must provide the instructor with the 'Notice of Approved Accommodations' from OSD before accommodations will be provided. Arrangements for academic accommodations can only be made after the instructor receives the 'Notice of Approved Accommodations' from the student.

Students with approved accommodations are encouraged to submit the 'Notice of Approved Accommodations' to the instructor at the beginning of the semester because a reasonable amount of time may be needed to prepare and arrange for the accommodations.

Additional information about the Office for Students with Disabilities is available at http://www.austincc.edu/support/osd/.

**Safety Statement**
Austin Community College is committed to providing a safe and healthy environment for study and work. You are expected to learn and comply with ACC environmental, health and safety procedures and agree to follow ACC safety policies. Additional information on these can be found at http://www.austincc.edu/ehs. Because some health and safety circumstances are beyond our control, we ask that you become familiar with the Emergency Procedures poster and Campus Safety Plan map in each classroom. Additional information about emergency procedures and how to sign up for ACC Emergency Alerts to be notified in the event of a serious emergency can be found at http://www.austincc.edu/emergency/.

You are expected to conduct yourself professionally with respect and courtesy to all. Anyone who thoughtlessly or intentionally jeopardizes the health or safety of another individual will be immediately dismissed from the day's activity, may be withdrawn from the class, and/or barred from attending future activities.

**Freedom of Expression**
Each student is strongly encouraged to participate in class. In any classroom situation that includes discussion and critical thinking, there are bound to be many differing viewpoints. These differences enhance the learning experience and create an atmosphere where students and instructors alike will be encouraged to think and learn. On sensitive and volatile topics, students may sometimes disagree not only with each other but also with the instructor. It is expected that faculty and students will respect the views of others when expressed in classroom discussions.

All discussion or conversation in the classroom should be appropriate and respectful of others.

**Students and Instructional Services**
ACC strives to provide exemplary support to its students and offers a broad variety of opportunities and services. Information on these services and support systems is available at: http://www.austincc.edu/s4/
Links to many student services and other information can be found at:
http://www.austincc.edu/current/
For help setting up your ACCeID, ACC Gmail, or ACC Blackboard, contact ACC Helpdesk at helpdesk.austincc.edu or 223-HELP.

**Ownership of Student Work**
The Architectural & Engineering Computer Aided Design (A&E CAD) Department reserves the right to retain any and all student work (including but not limited to: original work, scans, photographs, and copies of student work) completed as A&E CAD course work for the purposes of documentation, accreditation, evidence of student performance, university transfer, marketing or any other purpose supporting the mission of the Department and Austin Community College.

**Concealed Handgun Policy**

The Austin Community College District concealed handgun policy ensures compliance with Section 411.2031 of the Texas Government Code (also known as the Campus Carry Law), while maintaining ACC's commitment to provide a safe environment for its students, faculty, staff, and visitors.

Beginning August 1, 2017, individuals who are licensed to carry (LTC) may do so on campus premises except in locations and at activities prohibited by state or federal law, or the college's concealed handgun policy.

It is the responsibility of license holders to conceal their handguns at all times. Persons who see a handgun on campus are asked to contact the ACC Police Department by dialing 222 from a campus phone or 512-223-7999.