

# **AUTOCAD / DRAFTING**

## **COURSE SYLLABUS**

### **2010 - 2011**

#### Course Description

The AutoCAD/Drafting program at the TCTC is a two-year class designed to allow the student access to the basic principles of computer-aided design and drafting. The course is heavily geared towards the use of the latest computer hardware and software including AutoCAD, Architectural Desktop, and Inventor. A range alternative software packages will also be introduced to the student, so as not to “limit” him or her to the possibilities of design.

#### Instructional Philosophy

High standards will be met within the AutoCAD program. The daily class routine will be modeled much like a professional Design/Drafting office. A positive work ethic will be maintained, with each student working to his/her highest potential. As the program progresses through the Junior year, teamwork and joint projects will be stressed within the class. The facts are that technology is changing rapidly, and the student will be required to perform in various levels of the Design process, which will mean students, at times, will be assigned processes that will be completed within class and out of class. Also included within the two years will be oral and written projects presented to the class as a whole.

#### Course Goals

Students will...

- Demonstrate proper computer usage and lab/office safety and procedure standards set forth by the instructor and the TCTC.
- Students will demonstrate basic sketching and shape description techniques, on paper and on computer monitors.
- All students will be able to access the AutoCAD design software and the other software packages as they are introduced.
- File management techniques will be learned and demonstrated.
- Learn time management skills with long-term projects.
- Understand pre-engineering concepts and terms
- Using learned analytical problem solving skills, students will envision and conceive one major Architectural design.

### Major Course Assignments and Projects

1. Because the lab is computer based, students will spend time on the machines daily working with both short and long term assignments.
  - Observe and demonstrate lab entrance and exit procedures.
  - Observe and demonstrate safety precautions and equipment care.
  - Start up/shut down computers and CAD systems.
  - Proper usage of jump drives, CD disks, and hard drives.
  - File management skills.
  - Set drawing parameters.
  - Create and edit computer aided drawing utilities.
  - Demonstrate use of drawing aids, and output devices.
  - Use of symbols and importation of same within existing files.
  - Manage layers, line types, and plotting of completed projects.

### Advanced Computer Aided Drafting Skills

- Create three-dimensional displays and shapes.
- Create wire frame and solid model shapes.
- Create 2-D geometry from 3-D models.
- Create 3-D wire frame models from 2-D geometry.
- Demonstrate use of display commands (e.g. hidden line, shading, removal)

### Architectural Drawings

2. A major component of the Program is to learn the Basics of Architectural Design.
  - Students will draw residential floor plans from preliminary sketches.
  - Draw associated foundation and floor framing plans.
  - Complete associated elevations.
  - Draw sections and details, with schedules.
  - Complete electrical, plumbing, and HVAC plans.
  - Design a residential structure, including cost estimates.
  - Design, draw, and detail commercial structural shapes.
  - Introduction to Civil and Survey Drawing.
  - One self directed 9 weeks project

### Related Academic and Problem Solving Skills

3. Teamwork, and interpersonal skills with others are essential.
  - Team design projects using computers
  - Hands on bridge building design
  - Written and oral projects, (individual and group)

- Architectural mathematics and language skills
- Learn basic building code requirements
- Construction cost estimating and basic economics
- Understand technical concepts and principles
- Learn to apply academic knowledge and skills to the field of study
- Read, understand and communicate in the language of the field

#### Evaluation Criteria

- Attendance (daily points)
- Performance in the lab, time management skills
- Practical lab exams
- Related and written assignments and exams
- Unit assignments
- Tests, quizzes
- Job shadowing project and follow-up\*
- Senior Project\*

#### Grading Scales

Grading in the AutoCAD program will follow the accepted system adopted by the TCTC Board of education, which is described in the student handbook.

92% to 100% = A  
83% to 91% = B  
74% to 82% = C  
66% to 73% = D  
65% & below = F

\* Job shadowing and Senior project will constitute a major part of the total grading structure. Also, the Instructor reserves the right to alter any and all aspects of this lab based on students' progress, class dynamics any and all unforeseen circumstances which may arise.

## Safety Testing

Skill and technical training is second only to the safety of our students. To that end, the AutoCAD Program not only places a heavy emphasis on safety training, but requires that each student in the program take and pass safety tests before they begin any work that may have specific safety issues. The AutoCAD Program gives three such tests during the course of the program.

- **General Lab Safety**: The AutoCAD Program has a safety test that is intended to introduce the new student to safety issues associated with this program. There will be general classroom instruction to cover these issues and a written test to assess the student's understanding of these issues and how to deal with them. This general lab safety test must be passed at 100% before the student will be allowed to begin working in the lab. A note will be sent home to the parent(s) indicating that the student has passed the test and will require a signature from them. This will be returned to the program and kept on file.
- **Machine/Equipment Specific Safety**: Students will begin using different types of machines and equipment at various times throughout the program. Prior to using each machine or piece of equipment for the first time, he/she will be instructed in its safe and proper use. A test may be required to assess student understanding. These tests must be passed with 100% accuracy.
- **OSHA 10 hour Construction Safety / General Industry Safety**. This test is a 10 hour on-line course that instructs each student in the safety issues associated with their industry. This program is to be completed in the first two weeks of class, requires 600 minutes of online interaction and may or may not be completed during regular class time. Passage benchmarks for this test are set by OSHA. Students who successfully complete this safety course will receive the industry recognized 10 hour safety card issued by the Occupational Safety and Health Administration.

### **General Safety Policies:**

1. Students will be given safety instruction throughout the program. Students must pass any safety tests associated with this instruction before beginning any actual work in the specific area.
2. Parents of students, who fail the general lab safety, the OSHA 10 hour safety test or any specific safety test three consecutive times, will be required to attend a conference to discuss that student's requirements for continued participation in the program. This conference will be with the program teacher, program supervisor as well as the student.