

Engineering Design & Presentation

2020 – 21 Course Description

Engineering Design and Presentation (EDP) is a year-long introduction to the engineering and architectural design process and technical drawing using computers and specialized software. The purpose of this course is to teach students the basic skills, essential knowledge, and proper work habits for post-secondary study in technical design disciplines and/or entry-level employment in computer-aided drafting fields. The course will introduce students to a variety of uses for computer-aided drafting in industry and will allow them to explore potential careers.

At the end of this course, students will be able to utilize essential computer drafting skills to produce technical drawings for engineering and architectural projects, and be able to apply underlying theories to the creation of technical drawings for design.

Units and Topics of Instruction

- Engineering & architectural design processes
- Technical sketching & visualization
- 3D modeling using Inventor and SketchUp
- Architectural drawing theory and conventions
- Architectural design concepts and space planning
- Commands and conventions for AutoCAD
- Orthographic projection and multiview drawings
- Dimensioning
- Section views
- Isometric and assembly drawing
- Manual drafting & technical lettering

Prerequisites

Algebra I is required. Completion of *Principles of Applied Engineering* is required for 9th and 10th graders and students seeking an engineering endorsement, and *Geometry* is highly recommended.

Instructional Methodology

The course is project-based—meaning that the end result of each unit of instruction is the completion of one or more individual projects that allow students to demonstrate understanding of concepts and techniques learned in class. During each class, the instructor will present new information, using demonstration and lecture, and supervise students as they develop their understanding of concepts, techniques, tools, and processes used in design fields.

ONLINE – classes will include both synchronous (in-person) and asynchronous learning daily; synchronous work will be vital to conceptual understanding as well as partner and team work on projects

Industry Certifications

In the spring semester, students will have the opportunity to take an industry-valued software certification exam. Upon receiving a passing grade, students can become an Autodesk Certified User for AutoCAD.

College Credit

This course has been approved for local articulated credit at Austin Community College (ACC). If a 9th or 10th grade student completes this course with an average above 80 and has an approved portfolio of work, he or she can receive credit for an introductory technical drafting course, *DFTG 1405 Technical Drafting*. All students are eligible for statewide articulated credit. This course is offered as a weighted high school credit due to the college articulation.

Makeup Work and Absences

A student who misses class is responsible for all work missed during their absence, even if the absence is excused. Students should consult the BLEND class calendar and daily assignment to see what work was missed and ask the instructor for any necessary materials and/or files to complete the work.

Required and Recommended Materials

- Students must have a writing utensil in class every day. A mechanical pencil is recommended for periodic sketching activities.
- Graph paper, either loose sheets or a bound book (does not need to have a lot of pages)
- A portfolio is recommended by the end of the course as a way to maintain printed drawings and/or sketches for future uses

Grading Policy

A point system is used to record grades, with minor assignments valued between 10 and 25 points and major assignments valued between 50 and 100 points. All assignments will count as 85% of the six weeks grade. Long-term CAD and design projects will be broken into several major grades.

Frontline SIS (TEAMS) is the gradebook of record. Some assignments will be graded in BLEND; however, only grades shown in TEAMS are used for the six weeks average.

Daily Work (many minor grades per grading period)	Daily grades include CAD skills assignments, technical sketches, and other work done within a single class period, often with direct instructor guidance.
Projects (a few major grades per grading period)	Throughout the course, projects will be used to apply the knowledge and skills learned to authentic design challenges. Projects typically take several weeks to complete and feature several intermediate deadlines and more independent student work.
Employability Skills & Work Habits (one major grade per grading period)	Employability skills are important. All students will be given a Work Habits assessment <i>every day of class</i> . The average of these daily assessments will count for 15% of the six weeks grade. It is difficult to complete work for this course outside of class time, so our class time is highly valued and must be used well. Tardies, unexcused absences, lack of effort, and inappropriate use of technology are all issues that will affect a student's Work Habits daily grade. ONLINE – the Work Habits assessment will NOT be used until face-to-face instruction begins in the spring semester

Classroom Policies and Procedures

I enforce all campus and district policies, including dress code. These apply for online instruction also!

IN-PERSON

- The classroom is a learning and work environment. It is vital that students today learn to use technology appropriately during designated work time.
 - Students are not allowed to play games using classroom computers or personal devices, *even if class work has been completed*. Students playing games in class will receive a zero for the daily work habits grade.
 - Cell phones are for academic use only. Listening to music during class is not an academic use. No headphones should be worn during class time. The campus cell phone policy will be enforced.
 - Use of the internet and social media is strictly for academic purposes. Violation of this policy will result in the daily, weekly, or permanent removal of internet privileges.
- Copying work from another person or changing another student's work is strictly prohibited. This is a very serious matter, which will merit referral and a grade of zero, which cannot be replaced.
- Changing the fixed settings or configuration of the classroom computers is prohibited. This includes downloading programs.
- When the tardy bell rings each day, all students should be seated and begin working on the daily assignment or wait for instructions. Tardy students will lose points on the work habits grade on the day they are tardy. *Tardy students will not be allowed to use the hall pass—this is a big deal with a 90-minute class!*
- One student is allowed to leave the classroom at a time. Students MUST use the hall pass whenever they leave. No hall passes will be given out during the first 10 minutes or last 10 minutes of class. Hall pass privileges can be lost for the week, six weeks, or semester if misused.

ONLINE

- Students are expected to conduct themselves appropriately during online learning. All campus and district policies apply, including appropriate speech, written communication, dress, and general conduct.
- Students are expected to use technology appropriately, including Zoom or other online meetings, email communications, and other platforms.
- Class Zoom meetings will be recorded, even if they are not posted. Chat sessions for each Zoom meeting will be saved.