Course Name: Computer Aided Drafting and Design I (CADD I)

Course #: H7682 Grades: 9 – 12 Level: 0 Sem: 5X Credits: 2.5

Course Description:

Computer Aided Drafting and Design I (CADD I) is a semester long introductory course in using *computer-aided drafting* software. Students will be introduced to and gain a basic understanding of *Computer Aided Drafting* software to produce simple technical drawings following industry drafting standards for single view and multiple-view projections.

In order to become familiar with CAD software, students will begin by looking at various basic components such as the workspace, ribbon, model space, and layout. Students will then start learning commands for creating and modifying drawings, dimensioning, layers and properties, and finally, to prepare drawings for plotting. Students will progress through the course by increasing complexity in drawings. Complexity increases by shifting from 2-D to 3-D drawings. At the end of each unit, students will be able to create original technical drawings as they apply the design process to solve a problem.

Students will also develop an understanding of how computer aided drafting is applicable in various career fields such as architecture, engineering, design, contracting, etc. Furthermore, students will start building a portfolio of technical drawings and design projects that document their ability to use *Computer Aided Drafting* software in the engineering design process.

Course Proficiencies:

The following is a list of skills and concepts students will be proficient in upon successful completion of this course. These proficiencies form the basis of assessment of each student's achievement. Students who demonstrate understanding can:

1. Understand that technical drawings convey information according to an established set of drawing practices which allow for detailed and universal interpretation of the drawing. ***(8.1.12.A.2, 8.1.12.C.1, 8.2.12.C.5)***
2. Work collaboratively to support individual learning and contribute to the learning of others while developing an innovative solution to a real-world problem within a specific timetable. ***(8.1.12.C.1, CRP 1-12)***
3. Understand the broad range of career opportunities requiring technical drawing knowledge as a necessary prerequisite. **(CRP11, 9.2.12.C.3)**
4. Navigate through CAD software with sufficient proficiency to produce two-dimensional drawings of various views and levels of difficulty. ***(9.3.ST.6, 8.2.12.C.5)***
5. Work in model space, paper space, templates and view-ports. ***(9.3.ST.6, 8.2.12.C.5)***
6. Understand and know how to use basic drawing and modifying commands in 2-D and 3-D modeling. ***(9.3.ST.6, 8.2.12.C.5)***
7. Know and apply basic line conventions for their specific uses within a drawing following ANSI standards. ***(9.3.ST.6, 8.2.12.C.5)***

8. Know and apply basic dimension techniques following guidelines set by ANSI standards. ***(9.3.ST.6, 8.2.12.C.5)***
9. Create layers with assigned colors, line-types, line thickness, and filtering for added visibility. ***(9.3.ST.6, 8.2.12.C.5)***
10. Create 2D drawings from modeled 3D objects and model 3D objects from 2D drawings. ***(8.2.12.C.5, 9.3.ST.6)***
11. Understand and apply solid commands to make primitive solid shapes; combine primitive solid shapes using Boolean operators to make more complex solid shapes. ***(9.3.ST.6, 8.2.12.C.5)***
12. Create, save, and plot drawings with appropriate title block and title information. ***(8.1.12.A.1, 8.1.12.A.2, 8.2.12.C.5)***
13. Determine and use appropriate resources in the engineering design, development and creation of a 2D and 3D product. ***(8.2.12.D.3, ETS1.A, ETS1.B, ETS1.C, 9.3.ST-ET.4)***
14. Present designs with supporting evidence with strategic use of digital media and visual displays to enhance presentation. ***(8.1.12.A.2, SL.11-12.4,SL.11-12.5, 9.3.ST-ET.2)***
15. Create a portfolio of technical drawings and design projects that document the use of *Computer Aided Drafting* software in the engineering design process. **(8.1.12.A.1)**

Assessment:

1. Teacher observation
2. Classroom participation
3. Performance rubrics
4. Project evaluations
5. Drawing Rubrics

Board Approved Text:

None