Curriculum Outline

Campbell High School
Character – Courage – Respect – Responsibility

Course & Level: **Drafting**

Department: **Technology Education**

Teacher: **Paula Barry**

Grade level: **9-12**

Description of Course:

This one semester course prepares students to communicate solutions to design problems through conventional drafting and drawing methods. Applications of engineering design principles will be incorporated in this technical language. Focus is on creativity, resourcefulness, and the ability to visualize and think abstractly. Students must be able to portray technical and engineering representations in a clear and coherent standardized format. In addition, students are expected to learn basic architectural terminology and tools in the creation of drawings and residential design.

School – Wide Expectations:

The school-wide expectations are incorporated into all courses at Campbell High School. Underlined words in the following text illustrate this alignment between the school-wide expectations and the course

Academic
1. Read, write and speak effectively
2. Exhibit critical thinking and problem solving skills
3. Use resources to obtain information and facilitate learning

Civic/Social
1. Exhibit personal responsibility
2. Work cooperatively in an atmosphere of mutual respect.

Core Competencies and alignment with State or National Standards:

Perform
Students will create 2D sketches and produce 3D modeling parts and assemblies using English and Metric units of measure in the Solidworks software.
The student will also use Solidworks to produce basic engineering drawings using English and Metric units of measure and exhibit problem solving skills in their work.
Students will develop an introductory understanding of residential creation and planning using CAD software.
- A1. Select and use appropriate measuring tools to accurately gather, manipulate, and communicate information.
- A2. Exhibit the safe and proper selection, use and maintenance of technical equipment, materials, and processes.

Demonstrate
Students will demonstrate an understanding of 3D modeling and engineering drawings in the creation of prototypes using software tools specifically for this course including Solidworks and Chief Architect.
Students will demonstrate a basic understanding of residential architectural creation and planning.
- A2. Exhibit the safe and proper selection, use and maintenance of technical equipment, materials, and processes.
- A4. Demonstrate an awareness of career opportunities and requirements needed to make informed and meaningful choices in the education/employment in technical occupations.
- H1. Demonstrate an understanding of and an appreciation for the importance of accepting individual responsibility, developing a solid work ethic and learning to plan and work effectively.

Technical Drawing
Students will demonstrate an understanding of the technical language in applications of engineering drawings. Students will demonstrate a basic understanding of uses and applications of mechanical drawing instruments in project drawings. Students will use architectural terminology and tools to produce drawings and layouts.

A1. Select and use appropriate measuring tools to accurately gather, manipulate, and communicate information.
A2. Exhibit the safe and proper selection, use and maintenance of technical equipment, materials, and processes.

Suggested Texts and Media (Software, A/V, etc.):

1. SolidWorks 2010 software and instructional materials

2. Chief Architect software and instructional materials

3. Video: The American House, A Guide of Architectural Styles and instructional materials

Suggested Instructional Strategies:

Lecture and Demonstration
At the beginning of each unit, basic technological standards are provided and modeled by the instructor. For example, orthographic and isometric challenges are offered to students to introduce elementary board drawing. There is no mastery expected, just a conceptual exploration.

Mastery through Practice
At each stage of the drafting experience, several problems are given to the students to progress through the tools available to them. For example, in SolidWorks, students will begin to explore the program through simple 2D sketching and begin to work through challenges in complex 3D modeling parts, assemblies and engineering drawings.

Prototype Development
Students are expected to produce engineering drawings or architectural layouts portraying original concepts in terms of design challenges. For example, students are asked to design a small house that they would like to build. This challenge are time consuming but show creative thinking and an understanding of the software used in real-world applications.

Suggested Assessment Strategies:

Formative
Students are given multiple opportunities to meet competencies through project-based learning in the form of workbook and suppliment assignments and exercises.

Summative
Students are given multiple opportunities to meet competencies through project-based learning in the form of quizzes, problems and projects based on skills gained through workbook and supplemental exercises.

Final Exam
Final exam offers competency recovery of all course competencies.