



Principles of Engineering Design/CAD 2014-2015

Course Description:

This is a beginning course for students in all grades with an emphasis on the graphic language, mechanical drawing, lettering geometric construction, sketching and shape description, multi-view projection, oblique projection, sectional views, and dimensioning. Students will become proficient in the use of AccuCad Computer-Aided Design (CAD) software in the completion of required 2D engineering drawings. Students will become proficient in the use of our 3D computer-aided design and animation software (Rhinoceros). They will use this program to design their own Formula One Dragster and use online aerodynamic software to check their dragsters air resistance. Before students design their 3D dragster they will be required to sign on to our standards-based curriculum and state-of-the-art engineering tools which will guide them through an engaging, realistic product development process capped by a very cool virtual race – all before building their actual racers. A 3-D model, complete with wheels, axles, and bearings is literally developed in minutes! The simplicity of the modeling process puts focus where it belongs – learning critically important science, technology, engineering and math (STEM). And it's completely web-based...how cool is that? Students will also construct 3D rapid prototyping models utilizing our 3D printer. Students will be required to design and program their own Video Game using our state-of-the-art Multi Media Fusion 2 software. Students also will be required to design Architectural floor plans and then use the software's animation to complete a walk-through of their homes. Students have the opportunity to become part of our Technology Student Association and compete in CAD events. www.tsaweb.org. There will be a minimum material and supply fee for this course.

Course Content:

Mechanical Drafting
3D Engineering CAD Software
3D Engineering CAD Animation Software
National Association of Home Builders Software
Softplan Architectural Software
Rapid Prototyping
Video Game Development
Product Design and Development

Required Textbooks and/or Other Reading/Research Materials

This text encompasses all aspects of mechanical drafting and design, product development, and computer aided drafting and design 2D and 3D engineering.

Principles of Engineering Design by Jay D. Helsel, 2001.

Course Requirements:

Students will attain skill in the universal language of drafting and design, both mechanical and computer-aided drafting. Students are required to complete all projects, assignments and tests on or before due date. Students are expected to come to class prepared with all necessary materials. If you are absent for any reason, it is your responsibility to see your teacher for missed work. Please refer to the policy in the student handbook for timelines to make up missed work and tests. Students are expected to practice safe working habits when operating rapid prototype power equipment.

Grade Components/Assessments:

Grades will be based on categories: Cumulative Assessments 20%, Class Participation 10%, Projects/Coursework 70%.

Each marking period is worth 20% of a student's overall grade. The final exam is worth 20% of a student's overall average:

Quarter 1	20%
Quarter 2	20%
Quarter 3	20%
Quarter 4	20%
Final	10%

Required Summer Reading/Assignments:

No summer reading/assignments are required for this course