

PETERS TOWNSHIP HIGH SCHOOL

COURSE SYLLABUS: CADD

Course Overview and Essential Skills

The Computer Aided Drafting and Design (CADD) course is designed to teach students the parametric engineering using SolidWorks software and digital content creation tools. Students will utilize this state of the art software and hardware to create working drawings of product designs, 3D modeling, assembly animation, and virtual prototyping. This course is an innovative course for students who are interested in pursuing advance studies in any engineering based career, 3D design and numerous fields of CADD technology.

Course Textbook and Required Materials

- SolidWorks 2012
- Computer Lab

Course Outline of Material Covered:

Unit or Topic	Concepts/Skills/Resources	Timeframe
CADD IN ENGINEERING FOR THE AMERICAN SOCIETY	<ul style="list-style-type: none"> • describe and list examples of the integration of CADD 	ONE WEEK
TOOLS AND TECHNIQUES OF CADD	<ul style="list-style-type: none"> • discuss the importance of placing ideas on paper by means of technical sketches • sketch various lines and geometric shapes • participate in activities designed to produce finished engineering sketches 	TWO WEEKS
COMPUTER AIDED DESIGN AND ENGINEERING	<ul style="list-style-type: none"> • explain the advantages of using computers in design and engineering • list the purpose of each component in the CADD system • investigate the CADD functions and demonstrate the use of each • demonstrate the various ways to produce a drawing using CADD 	ONE WEEK
GEOMETRIC FIGURES AND CONSTRUCTIONS	<ul style="list-style-type: none"> • explain the importance of geometry in engineering design • layout two dimensional shapes • recognize the basic geometric solids 	TWO WEEKS

	<ul style="list-style-type: none"> perform the basic geometric construction locate tangent points on geometric figures apply CADD applications to construct geometric figures 	
MULTI-VIEW DRAWING	<ul style="list-style-type: none"> apply the principles of orthographic projection layout multi-view drawings apply the CADD system to generate multi-view drawings 	TWO WEEKS
DIMENSIONING	<ul style="list-style-type: none"> differentiate between the various ANSI dimensioning techniques demonstrate how parametric dimensions drive the geometry of a drawing apply both size and location dimensions to a drawing using appropriate dimensioning standards dimension a drawing using CADD application 	TWO WEEKS
ASSEMBLY BASICS	<ul style="list-style-type: none"> evaluate the current design and incorporate design changes that result in an improved product. review fastener selection based on strength, cost, material, appearance, and ease of assembly during installation. apply angular measurements, axes, parallel, concentric and coincident faces, and linear patterns generate pictorial drawings using CADD applications 	TWO WEEKS
REVOLVE AND SWEEP FEATURE	<ul style="list-style-type: none"> explore different modeling techniques that are utilized for parts molded or machined in a lathe process demonstrate an understanding of how parts and assemblies are related create axes and a profile of revolution to create a solid, 2D ellipse, and arcs 	TWO WEEKS

	<ul style="list-style-type: none"> • identify what tolerances must be taken into account when designing a product • generate revolve and sweep drawings using CADD applications 	
LOFT FEATURE	<ul style="list-style-type: none"> • explore how material properties, forces, and restraints affect part behavior • develop a general knowledge of how thin wall plastic parts are developed from lofts. • understand units and apply matrices • identify the what tolerances must be taken into account when designing a product. • generate loft drawings using CADD applications 	TWO WEEKS
APPLICATION OF ENGINEERING ACTIVITIES	<ul style="list-style-type: none"> • use critical thinking and problem solving techniques to solve an engineering problem • utilize the knowledge and skills learned throughout the course to design a problem solution • build and test a design solution to a given engineering problem 	TWO WEEKS

**Depending on the needs of the class or changes in the school year, the course outline is subject to change.*