

CAD

CAD and 3-D PRINTING Year/1 credit 11th - 12th grade

Basic AutoCAD and Autodesk Inventor programs will be demonstrated and used to create drawings of machine parts, plans, etc. 3-D printing will be introduced and utilized to create realistic three dimensional objects.

Course Resources:

Autodesk Autocad 2019

Autodesk Inventor 2015

Makerbot software

Course Outcomes:

Students will be able to create drawings using Autocad software.

Students will be able to design and build parts using 3D printers.

Students will be able to 2D drawings and create 3D representations.

Pa. Standards:

Standard - 3.4.10.A2 Interpret how systems thinking applies logic and creativity with appropriate comprises in complex real-life problems.

Standard - 3.4.12.A2 Describe how management is the process of planning, organizing, and controlling work.

Standard - 3.4.12.A3 Demonstrate how technological progress promotes the advancement of science, technology, engineering and mathematics (STEM).

Standard - 3.4.10.B4 Recognize that technological development has been evolutionary, the result of a series of refinements to a basic invention.

Standard - 3.4.12.B2 Illustrate how, with the aid of technology, various aspects of the environment can be monitored to provide information for decision making.

Standard - 3.4.10.C1 Apply the components of the technological design process.

Standard - 3.4.10.C2 Analyze a prototype and/or create a working model to test a design concept by making actual observations and necessary adjustments.

Standard - 3.4.12.C2 Apply the concept that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.

Standard - 3.4.10.D1 Refine a design by using prototypes and modeling to ensure quality, efficiency, and productivity of a final product.

Standard - 3.4.10.E6 Illustrate how manufacturing systems may be classified into types such as customized production, batch production, and continuous production.

Standard - 3.4.10.E7 Evaluate structure design as related to function, considering such factors as style, convenience, safety, and efficiency.