

Career and Technical Education Department

Design and Engineering

Senior High School



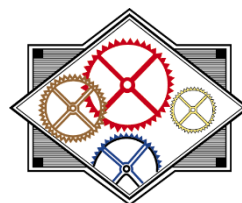
Arts & Communications



Business, Management
Marketing & Technology



Health
Science



Engineering/Manufacturing
& Industrial Technology



Human
Services



Natural Resources
& Agriscience

VPAA – Meets Visual, Performing & Applied Arts Requirement

OLE – Meets Online Learning Experience Requirement

SMR – Senior Math Related

CP - CTE Completer

21F – Course Available through Section 21F: Expanded Virtual Learning

*CAREER ZONES - Broad groupings of careers that share similar characteristics and whose employment requirements call for many common interests, strengths, and competencies.

DESIGN & ENGINEERING I – CAD (VPAA/SMR) – V610 9, 10, 11, 12 1.0 credit

This one-hour course is designed for students with a strong interest in design, engineering, manufacturing, and/or industrial technology as a career but are not able to enroll in the CTE 2-hour block. Students will learn how to create and interpret industry drawings using common terms and symbols. Students will develop skills in line control, lettering, sketching and manipulating drawing tools. Geometrical construction, orthographic projections, sectioning, and dimensioning techniques are taught along with an introduction to CAD programs, such as; Solidworks and A+CAD. Students may visit business partners and colleges/universities to help them explore opportunities in design and engineering. Students are encouraged to follow this course with Design & Engineering II in order to further their skill level and sit for the Certified Solidworks Associate exam.

**Course content may address skills pertaining to these potential Career Zones: Engineering, Manufacturing & Industrial Technology*

DESIGN & ENGINEERING II – CAD (VPAA/SMR/CP) – V620 10, 11, 12 1.0 credit

PREREQUISITE: Design & Engineering I – CAD

This course primarily requires the use of industry level CAD software programs, such as; Solidworks and A+CAD in the design of machine production drawings, project assemblies, technical illustration, and auxiliary views along with auto body design and related skills. During the year, occupations related to engineering are investigated and discussed. Students will visit business partners and/or colleges/universities to help students explore the opportunities available in the design and engineering profession. Every student enrolled in this course will have the opportunity to be **certified as a Certified Solidworks Associate (CSWA)** nearing the completion of this course. Students enrolled in this course may qualify for internship opportunities through the School-to-Work program. Successful completion of this course may qualify the student for articulated college credit.

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CTE DESIGN & ENGINEERING ADVANCED - CAD (VPAA/SMR/CP) – V500 11, 12 2.0 credits

This two-hour block course is designed for students with a strong interest in design, engineering, manufacturing, and/or industrial technology as a career. Students will learn how to create and interpret industry drawings using common terms and symbols. Students will develop skills in line control, lettering, sketching and manipulating drawing tools. Geometrical construction, orthographic projections, sectioning, and dimensioning techniques are taught along with an introduction to CAD programs in the first semester and more advanced projects in the second semester using industry level CAD software programs, such as; Solidworks and A+CAD. Students will have the opportunity to visit business partners and colleges/universities to help them explore the employment possibilities in the field of design and engineering. Every student will have the opportunity to be **certified as a Certified Solidworks Associate (CSWA)** nearing the completion of the course. Students enrolled in this course may qualify for internship opportunities through the School-to-Work program. Successful completion of this course may qualify the student for articulated college credit.

**Course content may address skills pertaining to these potential Career Zones: Engineering, Manufacturing & Industrial Technology*

DESIGN & ENGINEERING CAPSTONE – CAD (VPAA/SMR) – V630 11, 12 1.0 credit

PREREQUISITE: Design & Engineering II or CTE Design & Engineering

This course is available to students who have successfully completed DE I & II, or CTE Design Engineering (block) and have a strong interest in the area of design and engineering. This course is designed to teach students occupational skills and how to work in a project-based environment where students work independently as well as collaboratively. Students are required to follow performance objectives, compile a portfolio, and complete required CAD assignments using industry level CAD software programs, such as; Solidworks and A+CAD. Students enrolled in this course may qualify for internship opportunities as well as have another opportunity to sit for the Certified Solidworks Associate (CSWA) exam.

**Course content may address skills pertaining to these potential Career Zones: Engineering, Manufacturing & Industrial Technology;*