

## e2020 Curriculum Briefing Engineering Design I (EL5728)

### Course Description

Designers and manufacturers in virtually every industry use computer-aided design systems to create engineering design solutions. In this one-semester course, students will master the basics of CAD software: creating points, lines, other geometric forms, isometric drawings, and 3D models. Students will learn how to translate initial concepts into functional designs and 3D walkthroughs. Students will explore career options for engineers and CAD designers in this hands-on introductory-level course. This course includes instruction on how to create standardized drawings using basic CAD tools; interpreting 3D and 2D views of objects; producing orthographic, auxiliary, and section drawings; and creating a set of working drawings meant to be viewed by clients.

This course is aligned to the Washington State CTE Drafting and Design Technology framework and the Texas State TEKS Computer-Aided Drafting framework. This course is partially aligned to the Washington State CTE Engineering Design I framework and Project Lead the Way's Introduction to Engineering Design framework.

### Topics of Study

- Plotting shapes using coordinates
- Three-view orthographic drawings
- Sectional and auxiliary views
- Isometric and perspective drawings
- Dimensioning
- Working drawings
- Creating 3D objects in CAD

# e2020 Curriculum Briefing (continued)

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### Course Features

- The course provides step-by-step instruction on how to use CAD Standard Lite and Google SketchUp™, two innovative CAD software programs.
- In many project-based assignments, students will use CAD Standard Lite to create three-view orthographic drawings of objects and designs.
- In a dimensioning assignment, students will produce a set of professional-grade working drawings.
- In the final assignment of the course, students will use Google SketchUp to produce a three-dimensional design and then do a walkthrough of the design from the perspective of a human at the same scale as the design.
- Interviews with professionals in the field provide a career-related context for students' knowledge.
- This course includes many course graphics, animated images, and interactive exercises that enhance students' understanding.
- Each section of the course includes one or more project-based assignments that have students apply what they learned.

### Grading

Just as with our other e2020 courses, you always have the flexibility to tailor the grade weights for the course according to your own district, school, and student needs.

The default grade weights for this course are as follows:

- Assignments           0%
- Essays                 0%
- Quizzes               20%
- Tests                  10%
- Exams                 0%
- Projects               70%
- Additional            0%