

e2020 Curriculum Briefing Engineering Design II (EL5729)

Course Description

In the second half of this yearlong course sequence, students will continue to develop the engineering and computer-aided design skills gained in Engineering Design I. Students will continue to explore the principles of 2D and 3D modeling and design using Creo™ Elements/Direct™ Modeling Personal Edition and build on the math and reasoning skills essential to engineering. The hands-on experience students will gain through completing design challenges, product analyses, and more will equip them with the tools engineers need to succeed. This course includes instruction on how to manipulate both 2D and 3D objects in a 3D environment, an overview of the design process, how to perform in-depth product analysis, the mathematical skills used in 2D and 3D geometry, and how to dimension objects.

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

- The design process
- Creating simple 3D objects
- Use geometry to draw 3D objects
- Drawings and dimensions
- Product analysis
- Green engineering design

e2020 Curriculum Briefing (continued)

Engineering Design II (EL5729)

Course Features

- The course provides step-by-step instruction on how to use Creo™ Elements/Direct™ Modeling Personal Edition, an innovative 3D CAD software program used by professionals.
- Each section of the course includes one or more project-based assignments that have students apply what they learned.
- In many project-based assignments, students will use CAD software to create three-view orthographic drawings of objects and designs.
- In a paper design challenge project, students will use the design process to imagine, develop, and test a solution to a design challenge. Students get to choose between solving a design challenge involving a tall paper tower, long paper bridge, or stable paper platform.
- In another project, students choose a product to analyze and then create a product redesign proposal for the purpose of improving the product.
- 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.

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 | 20% |
| • Essays | 0% |
| • Quizzes | 20% |
| • Tests | 10% |
| • Exams | 0% |
| • Projects | 50% |
| • Additional | 0% |