

# FOLSOM CORDOVA UNIFIED SCHOOL DISTRICT



## Product Innovation & Design

<b>Board Approval Date:</b> January 18, 2024	<b>Course Length:</b> 1 Semester
<b>Grading:</b> A-F	<b>Credits:</b> N/A
<b>Proposed Grade Level(s):</b> 6, 7, 8	<b>Subject Area:</b> Elective <b>Elective Area (if applicable):</b> Math
<b>Prerequisite(s):</b> None	<b>Corequisite(s):</b>
<b>CTE Sector/Pathway:</b>	
<b>Intent to Pursue ‘A-G’ College Prep Status:</b> No	
<b>A-G Course Identifier:</b>	
<b>Graduation Requirement:</b> No	
<b>Course Intent:</b> <b>Program (if applicable):</b>	
<p><b>The Folsom Cordova Unified School District prohibits discrimination, intimidation, harassment (including sexual harassment) or bullying based on a person’s actual or perceived ancestry, color, disability, race or ethnicity, religion, gender, gender identity or gender expression, immigration status, national origin, sex, sexual orientation, or association with a person or group with one or more of these actual or perceived characteristics. For concerns/questions or complaints, contact the Title IX Coordinator(s), Equity Compliance Officer(s) and Section 504 Coordinator(s) :</b></p> <p><b>Donald Ogden, Associate Superintendent – Human Resources, Title IX Coordinator (Employees) &amp; Equity Compliance Officer</b>  <b>dogden@fcusd.org</b>  <b>916-294-9000 Ext 104410</b></p> <p><b>Jim Huber Ed. D., Assistant Superintendent – Educational Services, Title IX Coordinator (Students), Section 504 Coordinator &amp; Equity Compliance Officer</b>  <b>jhuber@fcusd.org</b>  <b>916-294-9000 Ext 104625</b></p>	

## COURSE DESCRIPTION:

The Product Innovation and Design course offers students the opportunity to use the design process to create imaginative solutions for various challenges. Students will be presented with a central issue at the beginning of the course and are encouraged to keep that problem in mind as they progress through the lessons. They acquire and apply techniques for conveying design concepts through drawings, explanations, and three-dimensional models. They also grasp the idea of simulating models to replicate real-world scenarios and collect data for in-depth analysis and insights. Working collaboratively, students identify the specific demands of a design, conduct thorough research on the subject, and involve relevant stakeholders.

## DETAILED UNITS OF INSTRUCTION:

Unit Number/Title	Unit Essential Questions	Examples of Formative Assessments	Examples of Summative Assessment
<b>1. Sketching and Measuring</b>	How can you communicate your design ideas to others?	*Create multi-view sketches *Measure objects and dimension sketches	*Object disassembly and documentation
<b>2. 3D Modeling and Fabricating</b>	How can you turn an idea into a real-world prototype?	*Create 3D models from drawings *Create 3D models from objects *Build objects from 3D models	*Create a product to solve a client's problem
<b>3. Creating a Solution</b>	How do you express yourself and your creativity through engineering?	- Create 3D models from drawings - Create 3D models from objects - Build objects from 3D models	*Create a product to showcase student creativity

## ESSENTIAL STANDARDS:

<https://www.cde.ca.gov/be/st/ss/documents/ccssmathstandardaug2013.pdf> Middle School NGSS Engineering Design Standards

MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impact on people and the natural environment that may limit possible solutions.

MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they met the criteria and constraints of the problem.

MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

MS-ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

**RELEVANT STANDARDS AND FRAMEWORKS, CONTENT/PROGRAM SPECIFIC STANDARDS:**

**Link to Common Core Standards (if applicable):**

Educational standards describe what students should know and be able to do in each subject in each grade. In California, the State Board of Education decides on the standards for all students, from kindergarten through high school.

<https://www.cde.ca.gov/be/st/ss/documents/finalelaccsstandards.pdf>

<https://www.cde.ca.gov/be/st/ss/documents/ccssmathstandardaug2013.pdf>

**Link to Framework (if applicable):**

Curriculum frameworks provide guidance for implementing the content standards adopted by the State Board of Education (SBE). Frameworks are developed by the Instructional Quality Commission, formerly known as the Curriculum Development and Supplemental Materials Commission, which also reviews and recommends textbooks and other instructional materials to be adopted by the SBE.

**Link to Subject Area Content Standards (if applicable):**

Content standards were designed to encourage the highest achievement of every student, by defining the knowledge, concepts, and skills that students should acquire at each grade level.

Product Innovation and Design Pathway D4.0 Apply various two-dimensional (2-D) graphic and/or three-dimensional (3-D) modeling techniques to development concepts. D5.0 Develop the concept into a well-defined product for prototyping. D6.0 Produce a prototype of a product.

**Link to Program Content Area Standards (if applicable):**

Program Content Area Standards apply to programs such as International Baccalaureate, Advanced Placement, Career and Technical Education, etc.

**TEXTBOOKS AND RESOURCE MATERIALS:**

**Textbooks**

Board Approved	Pilot Completion Date (If applicable)	Textbook Title	Author(s)	Publisher	Edition	Date
		N/A				

**Other Resource Materials**

Teacher created instructional materials.

**Supplemental Materials**

Board approved supplemental materials (Including but not limited to: Film Clips, Digital Resources, Supplemental texts, DVDs, Programs (Pebble Creek, DBQ, etc.):

N/A