Educating Students for Success

Lodi Unified School District

Curriculum and Instruction

CTE Course of Study Outline

Title of Course of Study: 3D Engineering Design with SolidWorks CTE

Course Number: _____ ***(Assigned by Curriculum Department)***

CTE Course of Study Adoption Process	
PROCEDURES:	
1	Write/revise course of study
2	Review with CTE Principal and acquire signature
3	**Email course of study to appropriate CTE sector staff at all high schools with link to Curriculum Council survey (email Delores Bohoman at A.R.E.** *dbohoman@lodiusd.net to get the survey)*
4	**Attach copy of survey and comments along with sign-in sheet from required department meeting.**
5	Meet with appropriate department teachers to discuss responses, review course of study and sign. Attendance sheet of meeting is required
6	**Technology review/sign prior to submission required if any technology components used**
7	Course of study MUST be complete, including required signatures, and submitted to Curriculum Dept. 2 weeks prior to the scheduled Curriculum Council meeting.
8	Assistant Superintendent, Curriculum & Instruction - Review/Sign
9	Assistant Superintendent, Secondary Education - Review/Sign
10	Present course of study to Curriculum Council
11	Curriculum Council Recommends
12	Board of Education Approves

Note: Please complete all sections. Enter "none" or "n/a" as appropriate.

I. **Course Title:** 3D Engineering Design with SolidWorks CTE

II. **Industry Sector:** Engineering and Architecture

Pathway Name: Engineering Design **Pathway #:** 152
Calpads #: 7730

CTE Course Level:
☐ Introductory Course
X Concentrator Course
☐ Capstone Course

Course of Study Proposal Reason:
X New Course
☐ Curriculum Update
☐ Textbook Update
☐ UC/CSU a-g Update

CTE Advisory Committee Approval: Meeting Date: December 16, 2020
(Meeting minutes and sign-in sheet must be attached)

III. Length of Course: 1 year **Credit Value:** 10

X Meets high school graduation requirement credits (F-Fine Art/Wor Lang/CTE)
☐ Elective course credit
☐ No credit

IV. Grade:
☐ 9th
X 10th
X 11th
X 12th

V. Course Level: ☐ General x CP ☐ Honors ☐ Pre-AP ☐ AP

VI. Is this an Internet-based course? ☐ Yes X No

If so, who is the course provider?

VII. UC/CSU Approved Course:
Do you wish to submit this course to the UCOP to obtain UC/CSU a-g approval?
X Yes ☐ No
Is this course modeled after a UC-approved course from another district?
X Yes ☐ No If so, which school/district?
Santiago High School, Corona-Norco USD (CAD Solid Modeling with SolidWorks)

VIII. Recommended UC/CSU Subject Area Pathway:
(Please complete each section as required by the UC system)

☐ *A. History/Social Science*
☐ *B. English*
☐ *C. Math*
☐ *D. Lab Science*
☐ *E. Languages Other than English*
☐ *F. Visual/Performing Art*
X *G. Elective*

IX. Subject Area Code for Lodi USD Graduation Requirements ***(select all that apply):***

☐*B. Fam Lvg/World Geography*
☐*C. Economics*
☐*D. Driver's Ed*
☐*E. English*
X *F. Fine Arts/Wor Lang/CTE*
☐*G. Government*
☐*H. Health/Safety*
☐*L. Life Science*
☐*M. Mathematics*
☐*P. Physical Education*
☐*S. Physical Science*
☐*U. US History*
☐*W. World History*
X *Y. Elective*

X. COURSE DESCRIPTION:

1. **COURSE OVERVIEW:** Students will learn to use SolidWorks software as a tool to create 3D CAD solid models and engineering drawings. An end goal of this course will be for students to earn the Certified SOLIDWORKS Associate - Academic (CSWA - Academic) certification which is intended for students with a minimum of six to nine months of SolidWorks experience and basic knowledge of engineering and fundamentals and practices. This is a marketable skill and a well sought-after certification in the engineering design industry. This certification will allow students to obtain entry-level employment in this industry. This is the concentrator course in the CTE Engineering Design pathway.

2. **HIGHLY RECOMMENDED PREREQUISITES & CO-REQUISITES:**

   A. Prerequisites: High School Math
   B. Co-requisites: Integrated Math 1

3. **COURSE CONTENT:**

   Unit 1: Sketching and Intro to Modeling
   Students will create sketches using a variety of sketching tools and techniques. Sketch entities will include lines, rectangles, circles, arcs, ellipses, and centerlines. Students will use sketch tools, including offset, convert, trim, and extend to manipulate the entities. Sketch relations (perpendicular, parallel, collinear, concentric, tangent, etc.) and dimensions will be applied to the sketch entities to create a unique sketch. Students will use these sketches to create boss and cut features, including extrudes, revolves.

   Unit 2: Solid Modeling
   Students will create a wide range of real world parts using beginner to intermediate tools and techniques. Students will use reference geometry to create extrude, revolve, sweep and loft features. Students will use fillets, chamfers, shells, mirrors, and patterns (linear and circular) to modify parts. Mass and material properties will be examined in order to design 3D parts with a variety of parameters.

   Unit 3: Assemblies and Drawings
   Students will use standard mates (coincident, parallel, perpendicular, tangent, concentric, distance, and angle) while inserting components to create assemblies from multiple parts. Students will create and dimension working drawings. Drawing will include standard orthographic projections, sectional views, auxiliary views, isometric renderings, and exploded views for assemblies. Students will apply proper dimensioning and tolerancing standards to their drawings. Students will create title blocks and annotate their work.

XI. Texts and Supplemental Instructional materials:
(Primary, Supplemental, newspapers, magazines, and software.)
Please supply ISBN #'s for all texts.

Title: SOLIDWORKS 2020 3 Book Combo: Intro to Sketching & Modeling, Modeling, and Assemblies & Drawings

Author: camInstructor

Publisher: camInstructor

Date of Publication: August 2020 ISBN # : 978-1-988766-47-8

Board Approval Date: _____

SIGNATURES for REVIEW		
Outline prepared by	Amy E Brown	Amy Brown Site: Tokay High School
CTE Principal	Julie Jansen	Julie Jansen Site: Lincoln Technical Academy
Technology Representative (if applicable)		
Teacher Representative or Principal:	***Signature indicates course is aligned to content standards.***	***** Please state reason for no signature in the space below.***
Bear Creek High School	N/A	Only taught at Tokay HS
Lodi High School	N/A	Only taught at Tokay HS
McNair High School	N/A	Only taught at Tokay HS
Tokay High School	Amy E Brown	Teacher
Tokay High School		Principal
Assistant Superintendent Curriculum & Instruction		
Assistant Superintendent, Secondary Education		

DATE	
5/10/2021	Date sent and/or presented to principal for review
5/10/2021	Course Outline Submitted
5/20/2021	Curriculum Council Recommendation for Approval
	Board of Education Approval