FOLSOM CORDOVA UNIFIED SCHOOL DISTRICT

Computer Science: Physical Computing

Board Approval Date: January 18, 2024	**Course Length: 1 Semester**
Grading: A-F	**Credits: N/A**
Proposed Grade Level(s): 6, 7, 8	**Subject Area: Elective** **Elective Area (if applicable):** **Computer Science**
Prerequisite(s): **None**	**Corequisite(s):**
CTE Sector/Pathway:	
Intent to Pursue 'A-G' College Prep Status: No	
A-G Course Identifier:	
Graduation Requirement: No	
Course Intent: **Program (if applicable):**	

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Donald Ogden, Associate Superintendent – Human Resources, Title IX Coordinator (Employees) & Equity Compliance Officer
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COURSE DESCRIPTION:

The Computer Science: Physical Computing course introduces students to the concept that programming extends beyond virtual environments and into the tangible world. It encourages students to explore the imaginative use of sensors and actuators in creating systems that engage with the physical environment. Alongside formulating algorithms and applying computational thinking principles, students write and transfer programs to microcontrollers capable of executing various real-world functions. This unit aims to enhance students' grasp of computer science fundamentals by emphasizing practical implementations.

DETAILED UNITS OF INSTRUCTION:

Unit Number/Title	Unit Essential Questions	Examples of Formative Assessments	Examples of Summative Assessment
1. Blink!	How do you create a program?	*Debug given programs *Simulate the transfer of data in a computer *Write an algorithm	*Create a message that is displayed on a microcontroller
2. The In's and Out's	How can programming interact with the real world?	*Describe difference between analog and digital sensors *Use sensors to gather environment data *Use outputs to interact with environment	*Create a model safe that uses sensors to set off an alarm when tripped and is remotely controlled by micro bit to be activated or deactivated
3. Programming the Physical World	How can computer programs solve problems?	*Short apps identifying and correcting redundant code.	*Create an interactive art display that uses lights, motion, and sound to showcase art. It must be easily accessible and interesting to a variety of people

ESSENTIAL STANDARDS:

https://www.cde.ca.gov/be/st/ss/documents/ccssmathstandardaug2013.pdf Standards for Mathematical Practice
1) Make sense of problems and persevere in solving them.
2) Reason abstractly and quantitatively.
5) Use appropriate tools strategically.
6) Attend to precision.

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/ccssmathstandardaug2013.pdf
https://www.cde.ca.gov/be/st/ss/documents/finalelaccssstandards.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.
California Career Technical Education ICT Model Curriculum Standards C3.0 Create effective interfaces between humans and technology. C4.0 Develop software using programming languages. C5.0 Test, debug, and improve software development work.

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