

FOLSOM CORDOVA UNIFIED SCHOOL DISTRICT



Aeronautics and Space Exploration

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): 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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COURSE DESCRIPTION:

The dynamic field of aerospace ignites within the Aeronautics and Space Exploration class, where students assume the roles of engineers, conceptualizing, building prototypes, and conducting experiments to grasp the fundamental principles of flight and the essentials of interstellar travel and habitation. They tackle authentic aviation and space-related hurdles, culminating in the development of a comprehensive mission plan for a journey to Mars.

DETAILED UNITS OF INSTRUCTION:

Unit Number/Title	Unit Essential Questions	Examples of Formative Assessments	Examples of Summative Assessment
1. Aeronautics	How do the principles of flight and aerodynamics shape our understanding of modern aviation?	*Create a cardboard glider that can travel a certain distance *Fly a drone through an obstacle course *Explain how Newton's laws affect the principles of flight	*Create a flight plan and crew schedule for a cross country trip
2. Space Exploration	What challenges and opportunities arise from human endeavors in space exploration?	*Describe what technology humans use to survive in space *Explain the concepts of satellite orbits *Analyze different possible model rocket fuels	*Model, simulate, and build a rocket
3. Red Planet Expedition: Journey to Mars	How can we effectively plan and execute a successful mission to Mars, considering the challenges and implications of interplanetary travel?	*Plan a crew for a Mars Mission based on specialties *Plan the blueprint of a Mars spaceship *Create a safe lander for cargo	*Model, simulate, and build a Mars rover

ESSENTIAL STANDARDS:

Middle School NGSS Science Standards

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/finaelacssstandards.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.

California Career Technical Education Model Curriculum Standards - Engineering B4.0 Understand the concepts of physics that are fundamental to engineering technology. B6.0 Employ the design process to solve analysis and design problems. B10.0 Design and construct a culminating project effectively using engineering technology.

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
		<i>N/A</i>				

Other Resource Materials

Teacher created instructional resources.

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