

FOLSOM CORDOVA UNIFIED SCHOOL DISTRICT



AP Physics C: Mechanics

CAC Approval Date: October 22, 2025 Board Approval Date: December 11, 2025	Course Length: 1 Semester
Grading: A-F	Credits: 5 Credits per Semester
Proposed Grade Level(s): 10, 11, 12	Subject Area: Physics Elective Area (if applicable):
Prerequisite(s): Required: Calculus completion or concurrent enrollment Recommended: Any level Physics	Corequisite(s):
CTE Sector/Pathway:	
Intent to Pursue 'A-G' College Prep Status: Yes	
A-G Course Identifier: (d) Laboratory Science	
Graduation Requirement: No	
Course Intent: District Course Program (if applicable): AP	
Folsom Cordova Unified School District 2024-2025 Nondiscrimination Statement 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, gender, gender identity, gender expression, immigration status, nationality, race or ethnicity, religion, sex, sexual orientation, or association with a person or a group with one or more of these actual or perceived characteristics. For questions or complaints, contact: Jim Huber, Ed.D., Assistant Superintendent, Educational Services Compliance Officer, Section 504 Coordinator, ADA Coordinator (students) jhuber@fcusd.org 916-294-9000 x 104580 Shannon Diaz, Director of Compliance Compliance Officer and Title IX Coordinator sdiaz@fcusd.org	

**916-294-9000 x 104415
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Rancho Cordova, CA 95742**

The Folsom Cordova Unified School District does not discriminate on the basis of sex and prohibits sex discrimination in any education program or activity that it operates, as required by Title IX and its regulations, including in admission and employment.

Inquiries about Title IX may be referred to the Folsom Cordova Unified School District's Title IX Coordinator, the U.S. Department of Education's Office for Civil Rights, or both. The District Title IX Coordinator is:

**Shannon Diaz, Director of Compliance
Compliance Officer and Title IX Coordinator
sdiaz@fcusd.org
916-294-9000 x 104415
1965 Birkmont Drive
Rancho Cordova, CA 95742**

The District nondiscrimination policy can be located at:

<https://www.fcusd.org/district/about-us/nondiscrimination-statementpolicy>

The District's nondiscrimination complaint procedures can be located at:

Students: <https://www.fcusd.org/departments/compliance/complaints/uniform-complaints>

Staff: <https://www.fcusd.org/departments/compliance/complaints/nondiscrimination-in-employment>

To report information about conduct that may constitute sex discrimination or sex-based harassment, or make a complaint of sex discrimination or sex-based harassment under Title IX, please refer to:

Students: <https://www.fcusd.org/district/about-us/title-ix-notificationsexual-harassment>

Staff: <https://www.fcusd.org/departments/compliance/complaints/sexual-harrassment-title-ix>

COURSE DESCRIPTION:

AP Physics C: Mechanics is a Calculus-based introductory college-level physics course. Students cultivate their understanding of physics by developing models of physical phenomena through inquiry-based investigations. Students build their understanding of physical models as they explore and solve problems in these topics:

Kinematics

Forces and Translational Dynamics

Work, Energy, and Power

Linear Momentum

Torque and Rotational Dynamics

Energy and Momentum of Rotating Systems

Oscillations

DETAILED UNITS OF INSTRUCTION:

Unit Number/Title	Unit Essential Questions	Examples of Formative Assessments	Examples of Summative Assessment
1. Kinematics	How can the motion of objects be predicted and/or explained? How can the idea of frames of reference allow two people to tell the truth yet have conflicting reports? How can we use models to help us understand motion? Why is the general rule for stopping your car “when you double your speed, you must give yourself four times as much distance to stop”?	*Labs *AP Classroom Progress *Checks *Quizzes *Problem Sets *Worksheets *Lab questions *Motion on a Ramp	*Quizzes *Labs *Exams
Unit 1 Essential Standards: 1.3.A Describe the position, velocity, and acceleration of an object using representations of that object’s motion. 1.4.B Describe the motion of objects as measured by observers indifferent inertial reference frames. 1.5.A Describe the motion of an object moving in two or three dimensions.			
2. Force and Translational Dynamics	Why do we feel pulled toward Earth but not a pencil? Why does the swirling motion continue after you’ve stopped stirring a cup of coffee? If you apply the same amount of “push” to a car as you would a shopping cart, why doesn’t the car move? Why must you push backward to make a skateboard move forward? How do you determine which team wins the tug-of-war: The team that pulls harder on the rope or the team that pushes harder on	*Labs *AP Classroom Progress *Checks *Quizzes *Problem Sets *Worksheets *Lab questions *Hooke’s Law	*Quizzes *Labs *Exams

	the ground?		
Unit 2 Essential Standards: 2.2.B Describe the forces exerted on an object or system using a free-body diagram 2.10.A Describe the motion of an object traveling in a circular path. 2.10.B Describe circular orbits using Kepler's third law.			
3. Work, Energy, and Power	Does pushing an object always change its energy? If energy is conserved, why are we running out of it? How much money can you save by charging your phone at school instead of at home? Why does a stretched rubber band return to its original length? Why does it seem easier to carry a large box up a ramp rather than a set of stairs?	*Labs *AP Classroom Progress *Checks *Quizzes *Problem Sets *Worksheets *Lab questions *Conservation of Energy	*Quizzes *Labs *Exams
Unit 3 Essential Standards: 3.4.A Describe the energies present in a system. 3.4.B Describe the behavior of a system using conservation of mechanical energy principles. 3.5.A Describe the transfer of energy into, out of, or within a system in terms of power.			
4. Linear Momentum	Why does water move a ship forward when its propellers push water backward? Why are cannon barrels so much longer and heavier than cannonballs? Why might a person land in the water instead of on the dock when trying to exit a canoe?	*Labs *AP Classroom Progress *Checks *Quizzes *Problem Sets *Worksheets *Lab questions *Conservation of Momentum	*Quizzes *Labs *Exams
Unit 4 Essential Standards: 4.2.A Describe the impulse delivered to an object or system. 4.3.A Describe the behavior of a system using conservation of linear momentum. 4.4.A Describe whether an interaction between objects is elastic or inelastic.			
5. Torque and Rotational Dynamics	Why does a curveball take less time to reach the plate than a fastball?	*Labs *AP Classroom Progress *Checks	*Quizzes *Labs *Exams

	Why is it easier to balance a bicycle when it's in motion? Why are long wrenches more effective? Why does it matter where a door handle is placed?	*Quizzes *Problem Sets *Worksheets *Lab questions *Variable Inertia	
Unit 5 Essential Standards: 5.1.A Describe the rotation of a system with respect to time using angular displacement, angular velocity, and angular acceleration. 5.3.B Describe the torques exerted on a rigid system. 5.4.B Describe the rotational inertia of a rigid system rotating about an axis that does not pass through the system's center of mass			
6. Energy and Momentum of Rotating Systems	What keeps a bicycle balanced? Why do planets move faster when they travel closer to the sun? What do satellites and projectiles have in common? How would figure skating be different if angular momentum wasn't conserved?	*Labs *AP Classroom Progress *Checks *Quizzes *Problem Sets *Worksheets *Lab questions *Variable Inertia	*Quizzes *Labs *Exams
Unit 6 Essential Standards: 6.1.A Describe the rotational kinetic energy of a rigid system in terms of the rotational inertia and angular velocity of that rigid system. 6.2.A Describe the work done on a rigid system by a given torque or collection of torques. 6.4.A Describe the behavior of a system using conservation of angular momentum. 6.5.A Describe the kinetic energy of a system that has translational and rotational motion.			
7. Oscillations	How can oscillations be used to make our lives easier and more comfortable? How can an astronaut be "weighed" in space? How could you measure the length of a long string with a stopwatch? What do a child on a swing, a beating heart and metronome have in common?	*Labs *AP Classroom Progress *Checks *Quizzes *Problem Sets *Worksheets *Lab questions *Pendulum	*Quizzes *Labs *Exams

Unit 7 Essential Standards: 7.2.A Describe the frequency and period of an object exhibiting SHM. 7.3.A Describe the displacement, velocity, and acceleration of an object exhibiting SHM. 7.4.A Describe the mechanical energy of a system exhibiting SHM.			

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/pd/ca/sc/documents/ngsshspysicalscidci.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.

<https://www.cde.ca.gov/pd/ca/sc/documents/ngsshspysicalscidci.pdf>

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.

<https://apcentral.collegeboard.org/media/pdf/ap-physics-c-mechanics-course-and-exam-description.pdf>

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.

<https://apcentral.collegeboard.org/media/pdf/ap-physics-c-mechanics-course-and-exam-description.pdf>

TEXTBOOKS AND RESOURCE MATERIALS:

Textbooks

Board Approved	Textbook Title ISBN #	Author(s)	Publisher	Edition
Yes	<i>Fundamentals of Physics</i>	Halliday and Resnick, Jearl Walker	Wiley	12