AP Physics C (Mechanics and E&M)

Course	Dates	Schedule	Instructor
AP Physics C (Mech and E&M)	Rollimg – 4/30/2027 (off: 12/24, 2/25/2027, 3/4/2027)	Thursday 7:00 PM – 9:00 PM	Mr. Kovalcin
Assessment Test	12/24/2026 2/18/2027 4/8/2027 4/22/2027	Thursday 7:00 PM – 10:00 PM	

Course Description

This combined course Assumes that you have already taken an Introductory Physics Mechanics course and you are concurrently taking Introductory Calculus.

Please note that the 1st lesson is on Tuesday; all others are Mondays.

#Classes	Unit	Combined AP Physics C Mechanics & EM
1	1/2	One and Two Dimensional Kinematics - Calculus Application - Polynomial Differentiation and Integration
2	3	Newton's Laws - Conceptual and Computational - Calculus Application - Drag Forces

3	3	Torques at Equilibrium - Calculus Application - Center of Mass
4	4	Work and Energy - Calculus Application - Work vs Potential Energy Function
5	5	One and Two Dimensional Momentum Conservation
6	6	Rotational Kinematics, Dynamics, Energy & Momentum Conservation - Calculus Application - Rotational Inertia
7	7	Introduction to Simple Harmonic Motion (SHM) - Lab Activity - Simple & Physical Pendulums

8	7	Completing SHM - Simple Harmonic Motion - Equations and Problem Solving - Calculus Application - Displacements, Velocities and Accelerations
9	12	Lab Activity - DC Circuits A-J - DC Electric Electric Circuits - Through Resistance

10	12	Lab Activity - DC Circuits K-T- DC Circuits - Through Power
11	12	Lab Activity - DC Circuits - Capacitors and Capacitance by Performance - Calculus Application - Capacitance/Resistance Circuits
12	11A	Electric Fields of Discrete and Continuous Charge Distributions via Coulomb's Law - Calculus Application

13	11A	Gauss' Law - Electric Fields produced by Spherical, Cylindrical and Planer Charge Distributions - Calculus Application
14	11A	Introduction to Electric Potential - Discrete and Continuous Charge Distributions - Calculus Application
15	11A	Capacitance by Design - Capacitors in DC Circuits - Calculus Application
16	11B	Introduction to the fundamental causes of Magnetic Forces and Fields - Magnetism in Matter
17	11B	Magnetic Forces on Moving Charges and Current Carrying Wires

18	11B	Calculating Magnetic Fields via Biot-Savart Law - Calculus Application
19	11B	Calculating Magnetic Fields via Ampere's Law - Calculus Application - Lab Activity - Measuring Magnetic Field Strength via Hall Effect
20	11B	Determining Magnetic Flux and Magnetic Inductance - Faraday's Law/Lenz's Law - Calculus Application
21	11B	Inductors, Resistors and Capacitors in Electric Circuits - Calculus Application
22	APC - #1	APC Mechanics and E&M - Exam Practice & Review
23	APC - #2	APC Mechanics and E&M - Exam Practice & Review
24	APC - #3	APC Mechanics and E&M - Exam Practice & Review
25	APC - #4	APC Mechanics and E&M - Exam Practice & Review
26	APC - #5	APC Mechanics and E&M - Exam Practice & Review

27	APC - #6	APC Mechanics and E&M - Exam Practice & Review

*3-May APC *Mechanics Exam* - Session 1 - Morning

*5-May APC *E&M Exam* - Session 2 - Afternoon

Program Pricing

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Teacher Profile

Mr. Kovalcin

Physics



Mr. Kovalcin, a physics enthusiast, has coached many students [one of which is currently the Department of Engineering Dean at Princeton] on the US Olympiad team and has contributed to a physics textbook. He has taught classroom physics for over 41 years at various institutions, including the Monmouth County Science and Engineering Center at Manalapan High School. His extensive experience includes teaching AP Physics 1, 2, C: Mechanics, and C: Electricity and Magnetism, as well as Honors and Olympiad Physics. In addition, he has been tutoring physics online for 13 years. Additionally, he coached the Manalapan High School Physics team to first place in the National Science League. Mr. Kovalcin's classes feature engaging laboratory experiments and demonstrations, and he is known for clearly explaining difficult concepts, specifically the origins and applications of the laws of physics.

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