CollegeBoard AP

AP® Physics C: Electricity and Magnetism

Your Course at a Glance

Plan

The Course at a Glance provides a useful visual organization for the AP Physics C: Electricity and Magnetism course components, including:

- Sequence of units, along with approximate weighting and suggested pacing. Please note, pacing is based on 45-minute class periods, meeting five days each week for a full academic year and for 90 minute periods meeting daily for a single semester.
- Progression of topics within each unit.
- Spiraling of the science practices across units.

Teach

PRACTICES

Science Practices spiral throughout the course.

1 Creating Representations
2 Mathematical Routines
3 Scientific Questioning and Argumentation

Required Course Content

Each topic contains required Learning Objectives and Essential Knowledge Statements that from the basis of the assessment on the AP Exam.

Assess

Assign the Progress Checks—either as homework or in class—for each unit. Each Progress Check contains formative multiple-choice and free-response questions. The feedback from these checks shows students the areas where they need to focus.

UNIT 8

Electric Charges, Fields, and Gauss's Law

~12/~24 Class Periods | **15–25%** AP Exam Weighting

- 8.1 Electric Charge and Electric Force
- 8.2 Conservation of Electric Charge and the Process of Charging
- 8.3 Electric Fields
- 8.4 Electric Fields of Charge Distributions
- 8.5 Electric Flux
- 8.6 Gauss's Law

Progress Check 8
Multiple-choice: ~18 questions
Free-response: 4 questions
- Mathematical Routines
- Translation Between Representations
- Experimental Design and Analysis
- Qualitative/Quantitative Translation

UNIT 9

Electric Potential

~10/~20 Class Periods | **10–20%** AP Exam Weighting

- 9.1 Electric Potential Energy
- 9.2 Electric Potential
- 9.3 Conservation of Electric Energy

Progress Check 9
Multiple-choice: ~18 questions
Free-response: 4 questions
- Mathematical Routines
- Translation Between Representations
- Experimental Design and Analysis
- Qualitative/Quantitative Translation

UNIT 10

Conductors and Capacitors

~8/~16 Class Periods | **10–15%** AP Exam Weighting

- 10.1 Electrostatics with Conductors
- 10.2 Redistribution of Charge between Conductors
- 10.3 Capacitors
- 10.4 Dielectrics

Progress Check 10
Multiple-choice: ~18 questions
Free-response: 4 questions
- Mathematical Routines
- Translation Between Representations
- Experimental Design and Analysis
- Qualitative/Quantitative Translation

UNIT 11

Electric Circuits

~12/~24 Class Periods | **15–25%** AP Exam Weighting

- 11.1 Electric Current
- 11.2 Simple Circuits
- 11.3 Resistance, Resistivity, and Ohm's Law
- 11.4 Electric Power
- 11.5 Compound Direct Current Circuits
- 11.6 Kirchhoff's Loop Rule
- 11.7 Kirchhoff's Junction Rule
- 11.8 Resistor Capacitor (RC) Circuits

Progress Check 11
Multiple-choice: ~24 questions
Free-response: 4 questions
- Mathematical Routines
- Translation Between Representations
- Experimental Design and Analysis
- Qualitative/Quantitative Translation

UNIT 12

Magnetic Fields and Electromagnetism

~10/~20 Class Periods | **10–20%** AP Exam Weighting

- 12.1 Magnetic Fields
- 12.2 Magnetism and Moving Charges
- 12.3 Magnetic Fields of Current-Carrying Wires and the Biot-Savart Law
- 12.4 Ampère's Law

Progress Check 12
Multiple-choice: ~18 questions
Free-response: 4 question
- Mathematical Routines
- Translation Between Representations
- Experimental Design and Analysis
- Qualitative/Quantitative Translation

UNIT 13

Electromagnetic Induction

~10/~20 Class Periods | **10–20%** AP Exam Weighting

- 13.1 Magnetic Flux
- 13.2 Electromagnetic Induction
- 13.3 Induced Currents and Magnetic Forces
- 13.4 Inductance
- 13.5 Circuits with Resistors and Inductors (LR Circuits)
- 13.6 Circuits with Capacitors and Inductors (LC Circuits)

Progress Check 13
Multiple-choice: ~18 questions
Free-response: 4 questions
- Mathematical Routines
- Translation Between Representations
- Experimental Design and Analysis
- Qualitative/Quantitative Translation