

Course at a Glance

Plan

The Course at a Glance provides a useful visual organization of the AP Physics 2 curricular components, including the following:

- 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.
- Progression of topics within each unit.
- Spiraling of the big ideas and science practices across units.

Teach

SCIENCE PRACTICES

Science practices spiral throughout the course.

- | | |
|---------------------------------|-------------------------------|
| 1 Modeling | 4 Experimental Methods |
| 2 Mathematical Routines | 5 Data Analysis |
| 3 Scientific Questioning | 6 Argumentation |
| | 7 Making Connections |

+ Indicates 3 or more science practices for a given topic. The individual topic page will show all the science practices.

BIG IDEAS

Big ideas spiral across topics and units.

- | | |
|---------------------------------|---------------------------|
| SYS 1-Systems | CON 5-Conservation |
| FLD 2-Fields | WAV 6-Waves |
| INT 3-Force Interactions | PRO 7-Probability |
| CHA 4-Change | |

Assess

Assign the Personal Progress Checks—either as homework or in class—for each unit. Each Personal 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 1 Fluids

~14–17 Class Periods | 10–12% AP Exam Weighting

- SYS** 1 7 **1.1 Fluid Systems**
- SYS** 4 6 **1.2 Density**
- INT** + **1.3 Fluids: Pressure and Forces**
- INT** + **1.4 Fluids and Free-Body Diagrams**
- INT** 6 **1.5 Buoyancy**
- CON** 2 6 **1.6 Conservation of Energy in Fluid Flow**
- CON** 2 7 **1.7 Conservation of Mass Flow Rate in Fluids**

Personal Progress Check 1

- Multiple-choice: ~40 questions**
Free-response: 2 questions
- Experimental Design
 - Paragraph Argument Short Answer

UNIT 2 Thermodynamics

~15–20 Class Periods | 12–18% AP Exam Weighting

- SYS** 1 7 **2.1 Thermodynamic Systems**
- PRO** + **2.2 Pressure, Thermal Equilibrium, and the Ideal Gas Law**
- INT** + **2.3 Thermodynamics and Forces**
- INT** + **2.4 Thermodynamics and Free-Body Diagrams**
- INT** 6 **2.5 Thermodynamics and Contact Forces**
- CHA** 6 **2.6 Heat and Energy Transfer**
- CON** + **2.7 Internal Energy and Energy Transfer**
- CON** + **2.8 Thermodynamics and Elastic Collisions: Conservation of Momentum**
- CON** + **2.9 Thermodynamics and Inelastic Collisions: Conservation of Momentum**
- SYS** 4 5 **2.10 Thermal Conductivity**
- CON** 6 7 **2.11 Probability, Thermal Equilibrium, and Entropy**

Personal Progress Check 2

- Multiple-choice: ~60 questions**
Free-response: 2 questions
- Quantitative/Qualitative Translation
 - Short Answer

UNIT 3

Electric Force, Field, and Potential

~23–25 Class Periods 18–22% AP Exam Weighting

SYS 1 7	3.1 Electric Systems
SYS 6 7	3.2 Electric Charge
CON +	3.3 Conservation of Electric Charge
CHA +	3.4 Charge Distribution—Friction, Conduction, and Induction
SYS	3.5 Electric Permittivity
INT +	3.6 Introduction to Electric Forces
INT +	3.7 Electric Forces and Free-Body Diagrams
INT +	3.8 Describing Electric Force
INT 7	3.9 Gravitational and Electromagnetic Forces
FLD	3.10 Vector and Scalar Fields
FLD +	3.11 Electric Charges and Fields
FLD +	3.12 Isolines and Electric Fields
CON +	3.13 Conservation of Electric Energy

Personal Progress Check 3

Multiple-choice: ~75 questions
Free-response: 2 questions

- Experimental Design
- Paragraph Argument Short Answer

UNIT 4

Electric Circuits

~14–16 Class Periods 10–14% AP Exam Weighting

SYS 6 7	4.1 Definition and Conservation of Electric Charge
SYS 4	4.2 Resistivity and Resistance
CHA +	4.3 Resistance and Capacitance
CON +	4.4 Kirchoff's Loop Rule
CON +	4.5 Kirchoff's Junction Rule and the Conservation of Electric Charge

Personal Progress Check 4

Multiple-choice: ~40 questions
Free-response: 2 questions

- Quantitative/Qualitative Translation
- Short Answer

UNIT 5

Magnetism and Electromagnetic Induction

~13–15 Class Periods 10–12% AP Exam Weighting

SYS 1 7	5.1 Magnetic Systems
SYS	5.2 Magnetic Permeability and Magnetic Dipole Moment
FLD	5.3 Vector and Scalar Fields
FLD +	5.4 Monopole and Dipole Fields
FLD 1 2	5.5 Magnetic Fields and Forces
INT +	5.6 Magnetic Forces
INT +	5.7 Forces Review
CHA +	5.8 Magnetic Flux

Personal Progress Check 5

Multiple-choice: ~35 questions
Free-response: 2 questions

- Experimental Design
- Paragraph Argument Short Answer

UNIT 6

Geometric and Physical Optics

~15–18 Class Periods

12–14% AP Exam Weighting

WAV
+

6.1 Waves

WAV
+

6.2 Electromagnetic Waves

WAV
1

6.3 Periodic Waves

WAV
+

6.4 Refraction, Reflection, and Absorption

WAV
+

6.5 Images from Lenses and Mirrors

WAV
+

6.6 Interference and Diffraction

UNIT 7

Quantum, Atomic, and Nuclear Physics

~13–15 Class Periods

10–12% AP Exam Weighting

SYS
INT
1
7

7.1 Systems and Fundamental Forces

CON
+

7.2 Radioactive Decay

CON
+

7.3 Energy in Modern Physics (Energy in Radioactive Decay and $E = mc^2$)

SYS
CHA
+

7.4 Mass–Energy Equivalence

SYS
WAV
+

7.5 Properties of Waves and Particles

WAV
6
7

7.6 Photoelectric Effect

PRO
1
6

7.7 Wave Functions and Probability

Personal Progress Check 6

Multiple-choice: ~50 questions

Free-response: 2 questions

- Experimental Design
- Short Answer

Personal Progress Check 7

Multiple-choice: ~55 questions

Free-response: 2 questions

- Quantitative/Qualitative Translation
- Paragraph Argument Short Answer