

Physics I Honors
Ms. Curtis
Textbook: Physics: Principles and Problems 2006

I. Chapter 1: Units and Problem Solving

August - May

- A. How do scientists make measurements? How precise do they have to be?
- B. Evaluation: This will be ongoing throughout the course
 - 1. Read pp. 2 - 19
 - 2. Exercises – pp 24 - 28
 - 3. Labs: Measurement & How does mass depend on volume?

Unit I. Motion & Forces

August 16 – October 1

Chapter 2: Representing Motion

- A. Can we describe motion without time?
- B. Evaluation:
 - 1. Read pp. 30-50
 - 2. Exercises-pp. 52 - 55:
 - 3. Labs: How fast is it going? & Where will the vehicle be?

Chapter 3: Accelerated Motion

- A. What is acceleration?
- B. Evaluation:
 - 1. Read pp. 56 - 75
 - 2. Exercises-pp. 80 - 84:
 - 3. Labs: How does a tossed ball move? How does a ball roll? & How fast is it accelerating?
 - 4. Take Test Chapters 2 & 3

Chapter 4: Force in One Dimension

- A. What are Newton's laws of motion? How do we apply them to our everyday lives?
- B. Evaluation;
 - 1. Read pp. 86 - 107
 - 2. Exercises-pp. 112 - 116
 - 3. Labs: Terminal Velocity & What are the forces in a Train?

Chapter 5: Forces in Two Dimensions

- A. What is a vector and why are they useful?
- B. Evaluation:
 - 1. Read pp. 118 - 138
 - 2. Exercises pp. 140 - 144:
 - 3. Lab: When will an object slide? How does an object move when 2 forces act on it?

Chapter 6: Motion in Two Dimensions

- A. What is the difference between linear and projectile motion?
- B. Evaluation:
 - 1. Read pp. 146 - 162
 - 2. Exercises-pp. 164 - 168
 - 3. Lab: What keeps the stopper moving in a circle?
 - 4. Take Test Chapters 4 - 6

Chapter 7: Gravitation

- A. How do scientists determine the maximum velocities and loops a roller coaster can have? Is there one all encompassing law that governs everything in the universe?
- B. Evaluation:
 - 1. Read pp. 170 - 188
 - 2. Exercises-pp. 190 - 194
 - 3. Lab: Is inertial mass equal to gravitation mass? & How can you measure mass?

Chapter 8: Rotational Motion

- A. Do we slide or roll to a stop – antilock brakes? What constitutes stability?
- B. Evaluation:
 - 1. Read pp. 196 – 220
 - 2. Exercises-pp. 221 - 226
 - 3. Lab: Torque
 - 4. Take Test

Unit II: Conservation of Energy & Momentum

October 4 – December 3

Chapter 9: Momentum & its Conservation

- A. How are momentum & impulse related?
- B. Evaluation:
 - 1. Read pp 228 – 248
 - 2. Exercises pp 250 – 254
 - 3. Lab: Is momentum conserved in a collision?

Chapter 10: Energy, Work, & Simple Machines

- A. What is the relationship between work and energy?
- B. Evaluation:
 - 1. Read pp. 256 – 276
 - 2. Exercises pp. 278 – 282
 - 3. Lab: How can pulleys help you lift?

Chapter 11: Energy & its Conservation

- A. How are kinetic energy, potential energy, and work related?
- B. Evaluation:
 - 1. Read pp. 284 - 304
 - 2. Exercises pp. 306 – 310
 - 3. Lab: Is energy conserved?
 - 4. Take Unit Test

Unit III: Vibrations & Waves

December 6 – February 4

Chapter 14: Vibrations & Waves

- A. What is the real difference between desirable and undesirable resonances?
- B. Evaluation:
 - 1. Read pp. 374 - 394
 - 2. Exercises-pp. 396 – 400
 - 3. Lab – Ripple Tank Demos

Chapter 15: Sound

- A. What is the Doppler effect? Just how fast does sound travel? What are the conditions that regulate the speed of sound?
- B. Evaluation:
 - 1. Read pp. 402 - 422
 - 2. Exercises-pp. 424 - 428
 - 3. Lab: What is a Decibel? & How fast does sound move in air?

Chapter 16: Fundamentals of Light

- A. How are colors related?
- B. Evaluation:
 - 1. Read pp 450 -447
 - 2. Exercises: 452 – 454
 - 3. Lab – How can you reduce glare?

Chapter 17: Reflection and Mirrors

- A. When you look into a clear lake, why is your image right-side up while a trees image is upside down?
- B. Evaluation:
 - 1. Read pp 456 - 473
 - 2. Exercises pp 478 – 482
 - 3. Lab - Plane Mirror

Chapter 18: Refraction and Lenses

- A. What causes images to be wavy?
- B. Evaluation:
 - 1. Read pp 484 - 503
 - 2. Exercises pp 508 – 512
 - 3. Lab – Index of Refraction & Lenses

Chapter 19: Interference and Diffraction

- A. How do bubbles produce a rainbow?
- B. Evaluation:
 - 1. Read pp 514 - 531
 - 2. Exercises pp 536 – 538
 - 3. Lab – What is the wavelength?
 - 4. Take Unit Test

Unit IV: Electricity and Magnetism

February 4 – April 1

Chapter 20: Static Electricity

- A. How can a doorknob shock you?
- B. Evaluation:
 - 1. Read pp 540 - 553
 - 2. Exercises: 558 -560
 - 3. Lab – How can you charge it up?

Chapter 21: Electric Fields

- A. What is an electric field and where are they?
- B. Evaluation:
 - 1. Read pp 562 - 579
 - 2. Exercises: 584 – 588
 - 3. Lab – How can large amounts of charge be stored?

Chapter 22: Current Electricity

- A. Why are high voltages used in transmission lines?
- B. Evaluation:
 - 1. Read pp 590 - 605
 - 2. Exercises: 610 – 614
 - 3. Lab – Is energy conserved in heating water?

Chapter 23: Series & Parallel Circuits

- A. Why are building loads connected in parallel and how are the circuit breakers connected?
- B. Evaluation:
 - 1. Read pp 616 - 631
 - 2. Exercises: 636 – 640
 - 3. Lab – How do parallel resistors work?

Chapter 24: Magnetic Fields

- A. How do forces applied by magnets cause particles to accelerate?
- B. Evaluation:
 - 1. Read pp 642 - 659
 - 2. Exercises: 664 – 668
 - 3. Lab – How can current produce a strong magnetic field?

Chapter 25: Electromagnetic Induction:

- A. How do the generators in a dam convert kinetic and potential energy of the water into electrical energy?
- B. Evaluation:
 - 1. Read pp 670 - 685
 - 2. Exercises: 690 – 694

Chapter 26: Electromagnetism

- A. Why are parabolic dish antennas well suited for receiving weak TV signals?
- B. Evaluation:
 - 1. Read pp 696 - 713
 - 2. Exercises: 718 – 720
 - 3. Take Unit Test

Unit III Heat & Thermodynamics

April 4 – May 27

Chapter 12: Thermal Energy

- A. How does thermal energy compare to kinetic and potential energy?
- B. Evaluation:
 - 1. Read pp. 312 – 334
 - 2. Exercises pp. 336 – 338
 - 3. Lab: How efficient are solar collectors? & Specific Heat Lab

Chapter 13: States of Matter

- A. What is the relationship between pressure and volume?
- B. Evaluation:
 - 1. Read pp. 340 - 366
 - 2. Exercises pp 368 – 372
 - 3. Lab: Why does a rock feel lighter in water?
 - 4. Take Unit Test

XI. Review for and take Final Exam