**Physics Activity Log 1st term**

M August 15

Introductions

Class Rules

Homework: Get class rules signed and bring back W

W August 17

Collect Rules

Scientific Method Notes

Prove Date

Unit Intro.

* Homework: News Article. Find an article from a newspaper, magazine or internet showing a problem and how they solved it- Due W. Chapter 1 Review p. 9, Scientific Method worksheet due M

R August 18

Tower Build Project

M August 22

* Dimensional Analysis
* Significant Figures
* Homework: Chapter 3 Practice Problem Worksheet packet (odds only) due W

**SCI.P.1.1 2010**

Using motion, maps, graphs and algebraic equations, describe, measure, and analyze constant acceleration motion in one dimension in terms of time and the vector quantities of displacement, velocity and acceleration.

W August 24

News Articles

Speed and Velocity Notes

Homework: Speed Worksheet due R

R August 25

Velocity and Vector Notes

Soh Cah Toa

Homework: Distance, Speed and Time worksheet, Vector Problems worksheet – due M

M August 29

Dimensional Analysis Quiz

Constant Speed Lab

Complex Vector Review Problems

Homework: Vector Packet due T

W August 31

Vector Review

Average Speed Lab: Find the Average Speed of a car going down a ramp, and then predict and prove three variables that will affect that speed.

Homework: Finish Vector Packet

R September 1

Instant. Speed Lab

Vector Quiz

T September 6

Test Review

Complex Vector Quiz

R September 8

Speed and Vector Test

**SCI.P.1.2 2010**

Using motion, maps, graphs and algebraic equations, describe, measure, and analyze constant acceleration motion in one dimension in terms of time and the vector quantities of displacement, velocity and acceleration. Consider specifically projectile and uniform circular motion.

M September 12

* Go over test results
* Play Mindtrap for Extra Credit
* Introduction Notes on Acceleration and Free Fall
* Introduce concepts and equations
* Homework: Acceleration worksheet both sides due W.

W September 14

* Go over Acceleration worksheet and collect
* Free Fall work with initial velocity
* Homework: Ch 4 Review 1-41 due M

R September 15

* Acceleration Lab
* Homework: Ch 4 Review 1-41 due M

M September 19

* Helicopter Problems
* Free Fall Lab
* Homework: Vel and acc worksheet and Falling Bodies Worksheet due W

W September 21

* Weather Balloon Problem
* Free fall group work
* Acceleration Quiz
* Homework: Ch. 4 Review 42-60 due R

R September 22

* Helicopter problem quiz
* Projectile motion intro and examples
* Driving over cliff problem
* Homework: Projectile Motion Worksheet due M.

M September 26

* Review projectile motion worksheet
* the monkey and banana problem together on board
* Homework: Chapter 5 review 1-49 odd and number 50 due R

W September 28

Film Case Rocket Lab

R September 29

* Projectile Motion Work- Due M you did not get done in class!
* Handed out Projectile Motion Packet
* Free Fall Quiz

M October 3

* Work day on projectile motion packet due end of period on W!

W October 5

* Projectile motion quiz
* Test Review

R October 6

* Projectile Motion/Acceleration Test
* **SCI.P.1.3**
* Describe the magnitude and direction of kinds of forces, including both contact forces and non-contact forces, those that act at a distance. Find the net force acting on an object using free-body diagrams and the addition of forces. Use Newton’s three laws to deductively analyze static and dynamic systems.
* **SCI.P.1.4 2010**
* Use Newton’s Law of Universal Gravitation and the laws of motion to quantitatively analyze the motions of orbiting objects such as the moon, the planets and satellites (i.e., Kepler’s Third Law of Planetary Motion).

M October 10

* Go over test
* Projectile Motion Lab

W October 12

* Notes on Aristotle, Newton, Galileo and Inertia and Newton’s Laws
* Homework: Force worksheets due R

R October 13

* Check Force Worksheets
* Force Lab
* Homework: Newton’s Law Packet due T

**2nd Quarter**

M October 17

 Nerf Gun Lab

T October 18 (traditional day due to PSAT)

* Collect Newton’s Law packet
* Horse and Cart discussion
* Force practice problem

R October 20

* Newton’s Law Quiz
* Notes on Mass vs. Weight
* Homework: Force and Weight worksheet, both sides and Newton’s 2nd Law Packet due M

M October 24

* Grade Force Packet
* Notes on Friction types
* First Free Body Diagram problem
* Homework: p. 850-851 1-25 all due W

W October 26

* Free Body example problem
* Force Quiz
* Homework: p. 851-852 26-37 due M

Fall Break Oct 27, 28

M October 31

* Ramp problem
* Circular Motion Notes
* Friction Lab
* Homework: Projectile Motion (both sides) and acceleration worksheet (both sides) due W.

W November 2

* Notes on Centripetal Acceleration and Universal Gravitation
* Notes on Universal Gravitation, Kepler’s Laws, Black Holes and Tides
* Ramp problem #2 and #3
* Homework: Free Body Packet Due M

R November 3

* Free Body problem
* Ramp Lab
* Fido Pop Quiz
* Homework: Free Body Packet Due M

M November 7

* Lawn mower Problem
* Went over packet problems
* Review packet problems, check packet

W November 9

* 50 point Free Body Quiz
* Test review

R November 10

* Force Test

M November 14

Roller Coaster Lab

**SCI.P.2.1, 2.2, 2.3 2010**

* Describe qualitatively and quantitatively the concepts of momentum, work, kinetic energy, potential energy and power.
* Quantitatively predict changes in momentum using the impulse-momentum theorem and in kinetic energy using the work-energy theorem.
* Analyze evidence that illustrates the Law of Conservation of Energy and the Law of Conservation of Momentum. Apply these laws to analyze elastic and completely inelastic collisions.

W November 16

* Momentum and collision notes
* Homework: Motion worksheet, both sides due R

R November 17

* Collect Motion worksheet
* Angular momentum notes
* Homework: Collision Packet due M

M November 21

* Turn in momentum work
* Collision Lab

W November 17

* Momentum packet work in groups get it done it class.

M November 28

* Notes on Work and Energy
* Homework: Practice problems work, both sides of both sheets due W
* Momentum Quiz

W November 30

* Simple Machine Notes
* Work Review
* Homework: Start Work and Energy Packet, all due M December 5

R December 1

* Energy Conversion Lab
* Work Quiz

M December 5

* Exercise Lab
* Notes on Work, Power and Efficiency
* Homework: Power, Work and Force worksheet, both sides due W along with packet due R

W December 7

* Power sample problems
* Discuss and check Power, Work and Force worksheet
* Power and work Quiz

R December 8

Check Packet

Power and Work Quiz

M December 12

* Power, Work and Momentum Test

W December 14

* MT
* Start Final Exam Review

Tuesday December 15

* Final Exam Review

R December 15

Final Exam Review

M December 19

-Final exam review

T December 20

- Physics Final Exam

**2nd Semester**

**3rd Term**

**Unit 1 – Heat and Energy**

**SCI.P.2.4 2010**

Describe and quantify energy in its different mechanical forms (e.g., kinetic, gravitational potential, elastic potential) and recognize that these forms of energy can be transformed one into another and into non-mechanical forms of energy (e.g., thermal, chemical, nuclear and electromagnetic).

**SCI.P.3.1 2010**

Describe temperature, thermal energy and thermal energy transfer in terms of the kinetic molecular model. Expand the concept of conservation of mechanical energy to include thermal energy.

**SCI.P.3.2 2010**

Describe the kinetic molecular model, use it to derive the ideal gas law and show how it explains the relationship between the temperature of an object and the average kinetic energy of its molecules.

**SCI.P.3.3 2010**

Use the kinetic theory to explain that the transfer of heat occurs during a change of state.

**SCI.P.3.4 2010**

Use examples from everyday life to describe the transfer of thermal energy by conduction, convection and radiation.

M January 9
Roller Coaster Lab

W January 11

* Review Notes on Energy Types
* Homework: Extreme Energy Packet- work in groups while in class, then finish at home on your own. Packet due R

R January 12

* Notes on Thermal Energy and Temperature
* Homework: Temperature Conversion Worksheet Due T.
* Boiling water lab

T January 17

* Notes on Measuring heat Notes on Measuring Heat
* Homework: Book assignment: Ch. 21 p. 424-425 Do problems 1-23 and define all vocabulary words in Chapter 21. Due R

R January 19 (textbook caravan day)

* Vector Review Lab Project
* Collect 1-23 Ch. 21

M January 23

* Heat review and Mixture concepts.
* Specific Heat Lab
* Homework: Heat Packet due W

W January 25

* Collect Book work
* Graded Specific Heat worksheet in class
* Notes on Phase Changes, Heat of Fusion and Heat of Vaporization
* Homework: Ch. 23 p. 464-465 in book problems 1-33 due R.

R January 26

* Graded book homework
* Phase change sample problem work
* Heat of Fusion Lab
* Homework: Phase Change Packet due next W

M January 30

Peanut Lab- burn the peanuts and try to solve for the Calories in a serving

W February 1

* Energy Flow Drawing Lab

R February 2

* Heat Transfer Notes
* Review and check energy problems
* Homework: Heat transfer packet due M

M February 6

* Conduction lab
* Check Heat transfer packet
* Heat Quiz
* Homework: Ch. 22 p. 445-447 1-17, 21-35 due W

W February 8

* Pressure, Buoyancy and Archimedes Notes
* Energy Transfer Quiz
* Homework: PBA packet due R

R February 9

* PBA review
* PBA Quiz

M February 13

* Heat and Energy Test
* **Physics Unit 6 Electromagnetic Energy**
* **SCI.P.4.1 2010**
* Using Coulomb’s law, describe and determine the force on a stationary charge due to other stationary charges. Know that this force is many times greater than the gravitational force.
* **SCI.P.4.2 2010**
* Define electric field and describe the motion of a charged particle in a simple electric field.
* **SCI.P.4.3 2010**
* Describe electric potential energy and electric potential (i.e., voltage). Use voltage to explain the motion of electrical charges and the resulting electric currents in conductors.
* **SCI.P.4.4 2010**
* Explain and analyze simple arrangements of electrical components in series and parallel circuits in terms of current, resistance, voltage and power. Use Ohm’s and Kirchhoff’s laws to analyze circuits.
* **SCI.P.4.5 2010**
* Describe the magnetic forces and fields produced by and acting on moving charges and magnetic materials

W February 15

* Notes on Magnets and Electromagnets
* Homework: Magnetism worksheet and Crossword puzzle due R

R February 16

* Lab 22.1 properties of magnets lab
* Check worksheet
* Homework: Magnetism worksheet packet due R

T February 21

* Lab 22.2 Magnetic Properties of Materials
* Static Electricity Notes
* Coulombs Law and Electric Field notes
* Homework: Static Electricity,

R February 23

Coulomb’s Law and Electric Field packet due next T

M February 27

* Static Electricity Lab
* Electric Field work packet

T February 28

* Notes on Series vs. Parallel circuits
* Homework: Electric Circuit packet due M
* Examples of Circuit work
* Magnetism Quiz

R March 2

* Electric Circuit Intro Lab
* Electric Circuit Packet due M

M March 6

* Electric Circuit Practice

W March 8

* Grade packet
* Electric Circuits Quiz

R March 9

Electric Circuit lab

M March 13

* Electromagnetism Test

Mindtrap

**Standards for Unit 7- Wave Mechanics**

**P.5.1** Identify properties of objects that vibrate by using Newton’s laws to describe and explain the vibrational motion resulting from restoring forces, such as Hooke’s Law in the case of spring or gravity in the case of a small amplitude pendulum.

**P.5.2** Describe how vibrating objects can generate transverse and/or longitudinal waves so that energy is transmitted without the transfer of energy. Distinguish longitudinal waves from transverse waves.

**P.5.3** Describe and analyze propagating waves in terms of their fundamental characteristics such as wave speed, wavelength, frequency or period, and amplitude.

**P.5.4** Describe and explain the behavior of waves such as transmission, reflection, interference and polarizations. Qualitatively describe and explain the production and properties of standing waves.

**P.6.1** Understand the geometric nature of light in reflection and refraction and in image formation by lenses and mirrors. Use that geometric nature to graphically predict the formation of images by lens and mirrors.

**P.6.2** Describe the electromagnetic spectrum (i.e., radio waves, microwaves, infrared, visible light, ultraviolet, X-rays and gamma rays) in terms of frequency, wavelength and energy. Recognize that all these waves travel in a vacuum at the same speed.

**P.6.3** Understand that electromagnetic waves are produced by the acceleration of charged particles. Describe how electromagnetic waves interact with matter both as packets (i.e., photons) and as waves. Show qualitatively how wave theory helps explain polarization and diffraction.

W March 15

* Notes on harmonic motion and pendulums
* Homework: p.507 define the first five vocabulary words and then do problems 1-4, 31-33 on p. 508, all due R

R March 16

* Pendulum lab

M March 20

* Notes on Hooke’s Law

Homework: Hooke’s Law packet

W March 22

* Hooke’s Law Lab

R March 23

* Notes on Characteristics of Waves
* Homework: 2 worksheets on Wave Mechanics and Pendulums, both sides of both sheets.

M April 3

* Hooke’s Law review problems

W April 5

* Wiggler Lab Demonstration
* Homework: Wave Basics Packet, all 12 pages
* Hooke’s Law and Wave Basics Quiz

R April 6

* Wave Lab

Wave Basics Packet

M April 10

* Sound Wave Intro Notes
* Homework: Vocabulary words p. 527, p. 528-529 1-25
* Sound Wave Lab Demo.

W April 12

* Check Ch. 26 review
* Homework: Sound Wave Packet

M April 17

* Light and Color Notes
* Homework: Color Packet

W April 19

* Packet work
* Ch. 27 p. 547 20-23, 26-32; Ch. 28 p. 576-577 34-42 and all vocabulary words from both chapters.

R April 20

Color Lab

M April 24

* Optic Intro Notes
* Refraction and Reflection notes
* Homework: Light Reflection and Refraction packet

W April 26

* Lab 16.2 p. 123-125 Do parts 1-4 Color Optics
* Lab 17.1 p. 127-131 Do parts 1-5 Reflection vs. Refraction
* Lab 17.2 p. 134-136 Do parts 1 and 2 only

R April 27

* Finish Labs
* Reflection packet work

M May 1

* Wave Review
* Light and Sound Quiz

W May 3

* Packet Check
* Review for Test

R May 4

* Wave Mechanics Test

**Standards for Unit 8- Atomic Structure and Nuclear Energy**

* **SCI.P.7.1 2010**
* Explain that electrons, protons and neutrons are parts of the atom and that the nuclei of atoms are composed of protons and neutrons, which experience forces of attraction and repulsion consistent with their charges and masses. Distinguish elements from isotopes.
* **SCI.P.7.2 2010**
* Explain that the stability of the nucleus, containing only positive or neutral particles, indicates the existence of a new force that is only evident within the nucleus, as it holds the particles together despite the strong repulsive electrical force.
* **SCI.P.7.3 2010**
* Distinguish fission from fusion processes. Describe how the binding energies of protons and neutrons determine the stability and instability of nuclei.
* **SCI.P.7.4 2010**
* Describe qualitatively how nuclear reactions (i.e, fission and fusion) convert very small amounts of matter into large amounts of energy.
* **SCI.P.7.5 2010**
* Understand that fission results from large, less stable nuclei decomposing to form smaller, more stable nuclei. Understand that fusion results from small nuclei at high temperatures and pressures combining to form larger, more stable nuclei and releasing thermonuclear energy.

M May 8

* Atomic Theory Notes
* Homework: Atomic Theory Work due at end of the period

W May 10

* Atom Game

R May 11

* Notes on Nuclear Reactions and Half-Lives , Fission vs. Fusion
* Homework: Nuclear Packet

M May 15

Nuclear Packet Work day

W May 17

M and M Lab everyone

R May 18

Nuclear Test

M May 22

Final Exam Review Day

T May 23

Final Exams, turn in textbooks and goodbye!!!!!