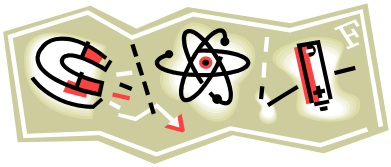
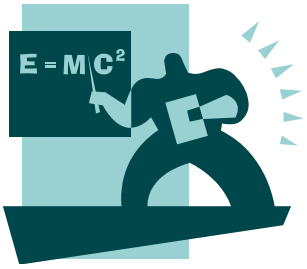


Barrington High School
AP Physics
Course Requirements and Expectations
Mr. Levesque
levesquej@bpsmail.org



About AP Physics

It is my immense pleasure and honor to teach AP Physics this year. The course at Barrington High School is guided by the AP Physics B curriculum, which is equivalent to a one-year college physics course typical such that a life science major may be required to pass. Although the curriculum is not calculus based, some students in the past have elected to take the calculus based Physics C exams (one for mechanics and one for electromagnetics), rather than the combined Physics B exam. Both exams require significant preparation on behalf of the student.

Although taking the AP exam is not a course requirement, it is expected that the goal of students enrolled in the course is to do well on the AP Physics B exam. Following the recommendation of the College Board, it is anticipated that students have had the equivalent of a one-year introductory high school physics course on which the AP Physics course will build.

I am looking forward to a rewarding and challenging year exploring physics with you!

Mr. Levesque
Email: levesquej@bpsmail.org
Web: http://www.barringtonhigh.org/C11/Mr%20Levesque/default.aspx

Grading

Quarter grades are based on your performance on tests, quizzes, homework, and laboratory work. During a typical quarter students would complete three to four tests, four or five homework quizzes, and four or five formal laboratory experiments (additional hands on activities are added whenever possible but will not be included as a laboratory grade). No grades will be dropped.

The approximate point distribution each quarter is as follows:

Tests and Quizzes 350 points
Laboratory Work 150 points
Homework 150 points

A two hour, closed notes, closed book exam will be given at the end of each semester accounting for 20% of the semester grade.

Text: Physics by Douglas C. Giancoli
2009 edition published by Prentice Hall

Homework

Students should anticipate homework assignments daily. The AP Physics curriculum is rigorous and students are expected to continuously review material on their own as well as complete problem assignments.

Although everyone is expected to turn in their own work, students are encouraged to from study groups to work with in and out of class to help better understand the material. Peer-coaching, peer-teaching, and peer-review are essential for furthering one's understanding of the material. Remember, *nobody works in a vacuum!*

Labs/Lab Notebook

There will be at least 12 formal lab reports during the course of the school year. The labs will range from "cookbook" experiments to open-ended experiments where you will be given an objective and a list of equipment and be expected to design your own procedure, data gathering, and data analysis. All students will be expected to keep a lab notebook in which they will keep a record of all the formal experiments performed throughout the year. A detailed handout depicting what should be contained in the notebook will be provided before the first lab experiment. Students should keep this notebook after the course is finished for the purpose of demonstrating to colleges and universities that you have met the lab requirement set forth by the AP board.

Missed Work and Extra Credit

Much of the material we examine in the course relies on an understanding of the preceding topics. Key concepts reappear throughout a wide range of topics. It is very important for students not to fall behind in their studies. I make myself available to students for extra help during my planning periods and after school. Generally my duties prohibit my availability in the morning. I also encourage students to communicate with myself and their peers by email.

If a student has been absent due to illness, or is simply struggling with the material, PLEASE COME SEE ME! I am more than happy to assist students one on one or in small groups. However, if you have fallen seriously behind it will be very difficult to catch up no matter how much time we spend together. **Students who are absent on the day of a test or a quiz will be expected to complete the assessment the next time in class.** Any work missed while taking the test or quiz will have to be made up during study or after school. Students who have missed material due to an extended absence should meet with me to develop a plan to make up any missed work and to schedule a time to take the test or quiz.

Sample data will be provided to any student that is absent during a laboratory. Students can elect to schedule a time to perform the experiment within 48 hours of returning to school. Because both the laboratory equipment and space is shared among several teachers it is not practical to keep experiments set up for much longer than this. **Homework will not be accepted late**. It is the responsibility of a student who is absent the day a homework assignment is due to show me their work once they return to school. If the student returns on a day that the class does not meet, the assignment should be placed in my mailbox in the office. Assignments are posted on the class website to assist absent students who do not wish to fall behind.

Computer Use in the Course

The use of the computer is becoming ubiquitous in education from the elementary school level through college. I maintain a website for the physics course located at http://www.barringtonhigh.org/C11/Mr%20Levesque/default.aspx Both students and parents are encouraged to use the site. Copies of course materials are made available through the site, due dates for assignments, upcoming laboratory and test dates, are all posted. I also hope to develop a list of print and web resources as the semester progresses.

Mr. Levesque will only provide library passes for the purpose of using the resources in the library to complete physics work.

Thank you for taking the time to review this information. Please feel free to contact me with any questions or concerns.

Projected Year Syllabus

I have listed below the schedule of topics covered in the course during the year. We should be finished with all topics by April Vacation.

Content Area	***Percentage Goals***	***Text Chapter***	***Approximate Time***
Introduction:			
Math Review Units & Dimension Data collection and analysis		Chapter 1	1 Week
I. Newtonian Mechanics	35%		
A. Kinematics	7%		1 Weeks
1. Motion in One Dimension		Chapter 2	
2. Motion in two dimensions, including projectile motion		Chapter 3	
B. Newton's Laws of Motion	9%		2 Weeks
1. Static Equilibrium (1st Law)		Chapter 4	
2. Dynamics of a single particle (2nd Law)		Chapter 4	
3. Systems of two or more objects (3rd Law)		Chapter 4	
C. Work, Energy, Power	5%		
1. Work and work-energy theorem		Chapter 6	
2. Forces and Potential Energy		Chapter 6	
3. Conservation of Energy		Chapter 6	
4. Power		Chapter 6	
D. Systems of particles, linear momentum	4%		2 Weeks
1. Impulse & Momentum		Chapter 7	
2. Conservation of linear momentum, collisions		Chapter 7	
E. Circular Motion and Rotation	4%		2 Weeks
1. Uniform circular Motion		Chapter 5	
2. Torque & Rotational Statics		Chapter 9	
3. Angular Momentum and its conservation		Chapter 5	
F. Oscillations & Gravitation	6%		2 weeks
1. Simple Harmonic Motion (dynamics and energy relationships)		Chapter 11	
2. Mass on a spring		Chapter 11	
3. Pendulum and other oscillations		Chapter 11	
4. Newton's Law of gravity		Chapter 5	
5. Orbits of planets and satellites		Chapter 5	
i. Circular			

Content Area	***Percentage Goals***	***Text Chapter***	***Approximate Time***
II. Fluid Mechanics and Thermal Physics	15%		
A. Fluid Mechanics	6%		2 Weeks
1. Hydrostatic Pressure		Chapter 10	
2. Buoyancy		Chapter 10	
3. Fluid Flow Continuity		Chapter 10	
4. Bernoulli's Equation		Chapter 10	
B. Temperature and Heat	2%		1.5 weeks
1. Mechanical equivalent of heat		Chapters 13, 14, &15	
2. Heat Transfer and thermal expansion		Chapters 13, 14, & 15	
C. Kinetic Theory and Thermodynamics	7%		1.5 weeks
1. Ideal gases		Chapter 13, 14, & 15	
i. Kinetic Model			
ii. Ideal Gas Law			
2. Laws of thermodynamics			
i. First Law (including processes on pV diagrams)		Chapter 13, 14, & 15	
ii. Second Law (including heat engines)			
IV. Waves and Optics	15%		
A. Wave motion (including sound)	5%		3 Weeks
1. Traveling waves		Chapters 11, 12	
2. Wave propagation		Chapters 11, 12	
3. Standing waves		Chapters 11, 12	
4. Superposition		Chapters 11, 12	
B. Physical Optics	5%		
1. Interference and diffraction		Chapter 24	
2. Dispersion of light and the electromagnetic spectrum		Chapter 24	
C. Geometric Optics	5%		
1. Reflection and Refraction		Chapter 23	
2. Mirrors		Chapter 23	
3. Lenses		Chapter 23	

Content Area	***Percentage Goals***	***Text Chapter***	***Approximate Time***
III. Electricity and Magnetism	25%		
A. Electrostatics	5%		1.5 Weeks
1. Charge and Coulomb's Law		Chapter 16	
2. Electric field and electric potential (including point charges)		Chapter 16	
3. Fields and potentials of other charge distributions		Chapter 16	
B. Conductors, capacitors, dielectrics	4%		1.5 Weeks
1. Electrostatics with conductors		Chapter 17	
2. Capacitors			
i. Capacitance			
ii. Parallel Plate		Chapter 17	
iii. Spherical and cylindrical			
C. Electric Circuits	7%		2 Weeks
1. Current, resistance, power		Chapter 18	
2. Steady-state direct current circuits with batteries and resistors only		Chapter 19	
3. Capacitors in circuits		Chapter 19	
i. Steady State			
D. Magnetic Fields	4%		2 weeks
1. Forces on moving charges in magnetic fields		Chapter 20	
2. Forces on current-carrying wires in magnetic fields		Chapter 20	
3. Fields of long current-carrying wires		Chapter 20	
E. Electromagnetism	5%		
1. Electromagnetic Induction (including Faraday's Law and Lenz's Law)		Chapter 21	
V. Atomic and Nuclear Physics	10%		
A. Atomic physics and Quantum Effects	7%		2 Weeks
1. Photons, the photoelectric effect, Compton Scattering, X-rays		Chapter 27	
2. Atomic energy levels		Chapter 28	
3. Wave-particle duality		Chapter 28	
B. Nuclear Physics	3%		
1. Nuclear reactions (including conservation of mass number and charge)		Chapters 30 & 31	
2. Mass-energy equivalence		Chapters 30 & 31	

Note: After the AP exam, we will cover selected topics in modern physics (relativity, etc.)