

# Physics I Honors Syllabus

*This advanced physics course studies the main principles of physics with a strong emphasis on problem solving. Geometry, advanced algebra and trigonometry will be used daily to help students gain a deeper understanding of our physical universe. Areas of concentration include motion, forces, energy, materials science, heat, waves, sound, light and electricity. Extensive laboratory work will foster understanding of natural physical phenomena. This course will strengthen student critical thinking skills as they use logic to understand complex systems. Students planning careers in mathematics, science, engineering or medicine will benefit from taking this course in Grade 11 and Physics AP in Grade 12.*

## Textbooks

- College Physics; Seventh Edition (Serway/Faughn) Volumes I and II. Volume I contains chapters 1 through 14. Volume II contains chapters 15 through 30.

## Required Supplies

- Binder with loose leaf paper. I **highly** recommend this over a spiral bound notebook for every course you take. You will be able to file all your notes, labs, and other papers neatly and in chronological order. Many handouts are already 3 hole punched.
- Scientific or graphic calculator—it must have buttons that say SIN, COS, TAN, LOG as well as an EE or EXP button. If you already own a calculator that meets these requirements then you do not have to purchase a new one. Graphic calculators are a good investment for future math and science courses but are not expected for this course. Texas Instruments graphic calculators are the best value if you are shopping for one. You are required to understand the operation of your calculator and you should carry the instruction manual with you. **Be sure your name is on your calculator and bring it every day! Cell phones and PDAs are not permitted in this class.**
- Daily supplies such as a pen, pencil, eraser, etc. *Please don't write in red or funky colors.*

## Pre or co-requisite

- Algebra II and Geometry are prerequisites and Trigonometry is a co-requisite. A prerequisite is a necessary set of skills you are required to have before entering a course. You **must** understand basic arithmetic, algebra, and geometry and are **expected** to have **mastered** the concepts covered up through Algebra II. A strong mathematical aptitude is essential for success in physics and in life!

## Attendance Policy

Daily attendance is required. No deduction of points will occur if excused absences are incurred; however, missed classes provide for missed experiences and information. It is your duty to ask classmates what you missed in class. Ask Mr. Flint for missed handouts and to schedule times for missed quizzes, tests, and lab experiments. Lab experiments must be made up within one week of the scheduled date and are due within one week of experiment completion. You must do the lab – we don't ever “share” data.

If you anticipate being absent for one or more classes due to a scheduled school activity or planned family vacation then see Mr. Flint in advance for assignments. You must be passing this course for me to sign a School Sponsored Activity form as passing.

## Homework

Homework will be assigned on a regular basis. All assignments are posted on the class web site and on the assignment board in the room at least two days in advance of when they are due. You should work on all assignments well in advance of their due dates so you can have any questions answered in class. I expect you to complete all assignments as all of the work you do is not trivial – it is an important and fundamental part of this course. **Expect that all assignments are due at the beginning of the period the day they are due. All assignments must be completed on time. Homework is not optional.**

In class assignments will be given from time to time and you should have sufficient time to complete them by the end of the period. Missed in class assignments are due the day after your return to class (Absent Monday, get assignment Tuesday, due Wednesday).

### *Type I – Go over in class*

Many homework assignments will be checked for completion at the beginning of each class since we'll go over them together. I usually walk around the room and look at your assignment. Each of these assignments is worth 10 points. If you make an honest attempt to complete all problems you will earn full credit. Otherwise, your grade will be proportional to the number of problems you complete (for instance, if you do 3 of 5 problems you will earn a grade of 6 points). The only way you may earn any credit for an assignment we go over in class is to have it with you at the beginning of that class. Homework we go over in class will **never** be accepted past its due date with the exception of an excused absence in which case it is due immediately upon return to the class. (It's called a "due date" because that's the date it's due.)

### *Type II – Turned in to the teacher*

Assignments that are turned in for a grade (labs, etc.) must be turned in on time. You may turn it in up to one day late for half the grade you would have earned if you turned it in on time. After one day it will not be accepted since I plan to return all turned in work within two days. If you are absent the day an assignment is due then it is due immediately upon return to the class.

## Expectations

I strictly adhere to the policies and procedures found in the student regulation and guideline folder and expect you to do the same. I help to enforce all school rules fairly and evenly, regardless of how I feel about them. You must arrive in class on time. You must be prepared.

We each have a few responsibilities while in each other's company. I have outlined them below:

### **Mr. Flint's Responsibilities**

1. To treat everyone with respect and care as an individual
2. To be honest
3. To provide a neat, orderly classroom environment
4. To provide necessary discipline
5. To provide the appropriate motivation
6. To assist you in learning physics

### **Student Responsibilities**

1. To treat everyone with respect and care as an individual
2. To be honest
3. To attend class each and every day
4. To be cooperative and not disruptive
5. To study and do your work
6. To learn and MASTER the required content

Fact: there are people in this world who are different than you. Learn to embrace diversity! I never tolerate ignorant or bigoted comments related to sexual preference, religion, physical ability or appearance, intelligence, culture, race or other distinguishing traits. Comments that demean other people are never acceptable, regardless of whether or not the person is in your presence.

## **Time Demands**

This is a demanding course that requires all students to complete a great number of homework assignments and lab reports and take a number of tests. This course carries the highest degree of difficulty (1.45 on a 1.0 to 1.45 scale) due to the amount of time that must be devoted to problem solving and studying in order to achieve a high grade. Difficulty factors are used in calculating class rank but do not affect honor roll status. *Proper time management and effort are the keys to your success!*

## **Web site & communication**

Be sure to utilize our classroom web site at [www.MrFlint.com](http://www.MrFlint.com) which provides direct support for this class as well as links to many, many useful sites that all students can benefit from.

Many students benefit from the assistance of other students in the class. Make a point to get help from Mr. Flint or someone else in the course if you do not understand a topic. Assistance from the teacher is available before school starting at 7:00AM, after school and during ELO. Be sure to

You will find a bevy of information on the class web site at [www.MrFlint.com](http://www.MrFlint.com) and you can contact me by e-mail at [chemtchr@yahoo.com](mailto:chemtchr@yahoo.com) and AOL Instant Messenger at [ljflintstone](#) in the evenings. I can also be contacted by phone at (570) 323-8862 for homework and lab questions. It is inappropriate for students to show up uninvited at my home.

## **Grading Policy**

You can access your grades online through the school district's new Parent Portal of our PowerSchool computer system.

Your grade at any time is simply the quotient of the points you have earned and the available points. The grading scale follows that adopted by the high school. I do not artificially inflate grades or fit student grades to a curve. What does that mean? Every student can earn an A in this course but... you have to work for it.

Tests are normally worth 100 points, quizzes and labs are normally worth 30 points, and homework and in class assignments are normally worth 10 points. Tests, quizzes, labs and assignments of increasing complexity or difficulty may be worth more points while simpler evaluations may be worth fewer points. Tests will usually count as  $\frac{1}{2}$  of your course grade so your mastery of the course material is essential.

**Homework is not optional. Homework must be completed on time.**

Interim progress reports are sent to parents of all students who are earning a grade of "D" or "E."

**Major Exam:** A comprehensive final exam will be given at the end of the course.

## **Academic Honesty**

Each student is expected to do his/her own work. Plagiarism, copying the work of others, cheating on a quiz or test by any method, presenting material prepared by others, making fraudulent statements to influence grading, bribery, and intentionally falsifying or arbitrarily inventing data is strictly forbidden. You are individually responsible for completing your own work. I want to know what YOU are thinking. The only think that may be common about lab reports is the data and observations – all analysis must be done on an individual basis.

Allowing others to copy your work is forbidden. Identical work of any sort will be assigned a grade of 0 (zero) points for all parties involved, including the originator of the work. All incidences of cheating will result in disciplinary referral and a letter to your parents. I make photocopies of all copied work.

**Cheating in unethical and diminishes you as a person and as a student.**

## Co-Curricular Activities

Participation in co-curricular activities creates a well-rounded student who is better prepared for life after high school. Students will be excused from class for music lessons and other pre-approved activities at all times! Be aware that you will be held responsible for any missed work.

Athletes: the PIAA requires that all students must maintain an acceptable grade in order to participate in any athletic activity. I am required to report student athletes who are failing this course on a weekly basis.

## Special Projects - *Going above and beyond minimum expectations*

Special projects may be undertaken by students who have made a valiant effort in the course by completing all assigned work. Special projects may include items such as reports on a specific science topic (oral or written), oral reports to the class on a recent science discovery or summary of a colloquia, a poster project based on your original science research, a bulletin board in a hallway, or anything else that goes above and beyond the minimum course expectations. You are expected to make an oral presentation of your project to the class. The maximum number of extra points per marking period is 20. Extra credit points will be added to the numerator of the grade.

## Course Topics

### Volume I: Mechanics

Chapter 1: Metrology and mathematical methods of physics

Chapter 2: Displacement, velocity, acceleration and free fall

Chapter 3: Vector analysis, two dimensional and relative motion

Chapter 4: Forces, Newton's laws of motion, friction

Chapter 5: Work, kinetic energy, potential energy and power

Chapter 6: Momentum, collisions and explosions

Chapter 7: Rotational motion and gravity

Chapter 8: Rotational equilibrium and rotational dynamics

Chapter 9: Physical properties of solids and fluids

### Thermodynamics

Chapter 10: Thermophysics, thermometry and gas laws

Chapter 11: Heat, specific heat, calorimetry and thermal transfer

Chapter 12: 1<sup>st</sup> and 2<sup>nd</sup> laws of thermo., entropy and metabolism

### Vibrations and waves

Chapter 13: Simple harmonic motion and waves

Chapter 14: Sound

### Volume II: Light and Optics

Chapter 22: Reflection and Refraction of Light

## Advanced Placement Exam

This is the first of a series of two courses that will prepare you for the Physics AP B exam. The AP exam is to be taken by students who are completing their second year of study in physics. You must, however, save all of your lab reports in a safe place in the event you decide to take the AP exam and wish to earn college credit in physics since some colleges require proof of completion of certain prescribed labs.

Students who perform well in this course will be invited to take Advanced Placement (AP) Physics next school year. AP Physics continues the study of electricity & magnetism and studies optics, atomic & nuclear physics and modern physics as well as AP test preparation topics.

## Your teacher

Mr. Flint graduated from Blue Ridge High School in New Milford, PA in 1993. He attended Lock Haven University from 1993 to 1998 where he earned a Bachelor of Science in Education (B.S.Ed.) degree with concentrations in Chemistry, Physics and General Science.

In the spring of 1999 Mr. Flint taught chemistry at Pocono Mountain High School in Swiftwater, PA. He has been teaching chemistry and physics courses here since the fall of 1999 and earned a Master of Education (M.Ed.) degree in science education from Lock Haven University of Pennsylvania in 2000. Mr. Flint holds PA teaching certifications in Chemistry, Physics, General Science, Earth & Space Science, English, Mathematics, Health Education and recently finished a Curriculum Supervisor Certificate program at Bloomsburg University of PA. His hobbies include bicycling (he rode a bicycle across the country in 2002), traveling, canoeing, photography, and working on the house that he shares with his wife, cats, chameleon, tree frogs and hundreds of fish and marine invertebrates.