

Physics II Honors Syllabus

A course designed to prepare science, math and engineering majors for future careers. Several college-level texts will be used to broaden the student's background. Calculus will be used extensively in derivations and occasionally by the students to complete assignments. This course will help students gain a better understanding of mathematical applications and help prepare them for the Advanced Placement Test in Physics.

This course will strengthen your ability to think critically about natural physical phenomena, use logic to understand complex systems, and solve problems related to the topics covered in this course.

Textbooks

- Stephen Hawking's Universe (David Filkin)
- College Physics (Serway/Faughn) Volume II.
- Fundamentals of Physics (Halliday, Resnick and Walker)

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. 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! 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.*

Prerequisite

- Grade of 85 or higher in Physics I or Physics I Honors and recommendation of science teacher. The recommended co-requisite is Calculus I. 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 Trigonometry. 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.

Excused absences (authenticated by a "green slip") are the only absences for which the student may make up missed quizzes, homework, classwork, tests or laboratory experiences. Green slips are necessary to be readmitted to class in **all** cases except for absences due to school-sponsored activities.

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.

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

Your occupation is that of a student. The State of Pennsylvania requires you to be enrolled in an educational program, be it at a public or private school. The federal, state, and local governments invest a great deal in your future by providing this educational opportunity. School is exactly that... an opportunity. It is not to be taken lightly nor is it a form of punishment (despite what some people think).

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 can expect me to confiscate cellular telephones and other prohibited items. *Our freedom is limited by our liberty.* 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 provide a neat, orderly classroom environment
3. To provide necessary discipline
4. To provide the appropriate motivation
5. To assist you in learning chemistry

Student Responsibilities

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

Failure to meet these expectations or the school rules will result in removal from the class, reassignment of seat, detention with the teacher or disciplinary referral.

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 (1.4 on a 1.0 to 1.4 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 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 and you can contact me by e-mail at 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 should be able to calculate your own grade at any point during the marking period by keeping close record of all grades. Grades are also updated on the web site on a weekly basis.

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.

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

Students whose current grade is less than 80% will be required to attend ELO until their grade rises above 80%.

Major Exam: A comprehensive final exam will be given at the end of the course. You may also take either the AP B or C exam.

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 30. These points will be added to the numerator of the grade.

Course Topics

Steven Hawking's Universe

- Ch. 1: Our place in the universe
- Ch. 2: The fathers of physics
- Ch. 3: Using light as a tool to travel through space and time
- Ch. 4: Einstein's relativity
- Ch. 5: The Big Bang and its leftovers
- Ch. 6: The extremes of elementary particles and cosmology
- Ch. 7: Particle physics
- Ch. 8 and 9: Extreme particles

Serway & Faughn Volume II

- Chapter 26: Relativity
- Chapter 27: Quantum Physics
- Chapter 28: Atomic Physics
- Chapter 29: Nuclear Physics
- Chapter 30: Nuclear energy and elementary particles

Halliday, Resnick and Walker

- Chapter 22: Reflection and refraction of light
- Chapter 23: Mirrors and lenses
- Chapter 24: Wave optics
- Chapter 25: Optical instruments

Serway & Faughn Volume II

- Chapter 19: Magnetism
- Chapter 20: Induced voltage and inductance
- Chapter 21: Alternating current circuits and electromagnetic waves

Advanced Placement Exam

This is the second of a series of two courses that will prepare you for the Physics AP B or C exam. The AP exam is to be taken by students who are completing their second year of study in physics. However, this is a transitional year for our advanced physics program so our school is not listed in the AP registry for physics as we are for many of our other AP courses. You may take the exam but your college may not give you credit regardless of your score. Consult the university you plan to attend for details.

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 hold PA teaching certifications in Chemistry, Physics, General Science, Earth & Space Science, English, Mathematics and Health Education.

His hobbies include bicycling (he rode a bicycle across the country in 2002), traveling, camping, photography, and working on the house that he shares with his wife, five cats, a chameleons, two turtles and about thirty aquariums full of fish and marine invertebrates.