

Physics Themed Syllabus – Williams 2016-17

Contact information: Mr. Williams, Office: Room 185, Phone: 570-8503, Email: jwilliam@hinsdale86.org

Expectations

Above and beyond anything else, I hope all of you have a good experience in physics and get to know and appreciate your classmates. Work hard, have fun and show you have character by doing the right thing and I'm sure you'll learn physics well and grades will reflect that.

What is physics?

The laws of physics are the laws of the universe. Physics explains why the sky is blue and how far a pass will go if you throw it twice as fast (hint: it's NOT twice as far!). While math is a part of regular physics, this course is less mathematically rigorous than traditional or honors and emphasizes understanding the principles of physics conceptually. Good news: You will be using an online text book this year, so no lugging a heavy book from class to class.

Physics has a lot of cool labs & demos too. Plus, we get to do a lot of computer simulations and we have some interesting physics videos you'll like too. There are also lectures, note taking and problem solving, but you'll get somebody to work with on problems and group projects. By the time you're done, you will have a better understanding of the rules of the universe.

Course Outline

Sem. 1 – Waves/Sound & Electricity/Magnetism

1. Basic Skills, Problem Solving & Graphs
2. Waves
3. Sound
4. Light & Color
5. Mirrors & Reflective Optics
6. Electrostatics & Fields
7. Electric Current & Circuits
8. Magnetism & Induction

Sem. 2: Sporty Physics & Rollercoaster Physics

9. Linear motion I
10. Linear motion II – Free Fallin'
11. Vectors & Projectiles
12. Energy
13. Work, Power & Machines
14. g-forces, Newton's laws and Circular Motion
15. Impulse/Momentum

Required Materials

1. Journal for note taking (no spirals, please!) & writing instrument
2. Scientific calculator capable of exponents & trig (not phone!)

Classroom Behavior Expectations

1. "Do the right thing": Listen during instruction, stay positive and be respectful of school property, your teacher and other students

Grading

The quarterly grading system is a total point system. Your grade is based on both performance and effort. Performance means you solve problems correctly and demonstrate understanding. Effort means you are providing me with evidence that you are trying hard to do your best. For test curves, I reflect on class effort as well as difficulty to determine whether and how much of a curve is appropriate.

Letter grades

A = 90 – 100% B = 80 – 89% C = 70 – 79% D = 60 – 69% F = 0 – 59%

Approximate Point Breakdown

- 1 test/quest per unit, about 10 pts per day (10 day unit is about 100 pts)
- 1 journal checks per unit, random spot notes check, about 5-10 pts
- Homework sheets: 5 pts each (3 to 4 per week) → completion and answer spot check
- Quarterly project: up to 50 pts (some quarters)
- Group points: depends on how much group work we do → usually 5 pts per assignment
- Participation points: occasionally

Semester grading is based on the following formula

- Quarter 1 percent 40%, Quarter 2 percent 40%, Final exam percent 20%

Acing a test or being just plain awesome

- I really appreciate good students beyond just a grade. Last year I made a lot more "good" calls home to parents than "bad" calls. Most calls were about getting the highest test score in class on a test.

Other procedures & advice

Homework: Most HW assignments are worth 5 points. The HW expectation is

- for word problems: list variables, show equation by itself, box or underline final answer with units
 - example:
 - List: $v = +3 \text{ m/s}$, $t = 5 \text{ sec}$, $x = ?$
 - Eqn: $x = v \cdot t$
 - $x = 3 \cdot 5 = \underline{15 \text{ m}}$
- for conceptual problems: include an explanation where appropriate
 - example: Q: Which two are more similar: xrays, visible light or sound and why?
 - Not acceptable: xrays and visible light (or merely circling them)
 - Acceptable: xrays and visible light are more similar because they are both EM and only differ in frequency (sound is not part of the EM spectrum, is a longitudinal wave and requires a medium)

I look for evidence of appropriate effort. If you're stuck on something, put something on paper to show me you tried and you'll get a good amount of credit. If you put some time and thought into a problem that's hard, you'll learn when you find out the answer! Sometimes I will spot check a particular problem for some of the points, and/or I will spot check a particular question for compliance with expectations. **Note: Good class effort might mean less homework for your class....ask!**

Missed HW Assignment: It's important to keep up with work; otherwise, you won't get as much out of class. In order to encourage you to keep up with HW, I do not accept HW for 1/2 credit. If you miss class for any reason, it's **your responsibility on the day** you return to school to either show me your late work, or for an extended absence, propose a make-up plan to me with a specific timetable. Up to 2 assignments per quarter can be excused for any reason by doing an **alternate assignment**. If a detailed key is available, assume you must turn in that assignment to receive an excused.

1. Turning in an article pertaining to a topic we study in this class along with a 1 page handwritten summary/critique on the article. Turn in BOTH the summary and the article.

Journal: The journal is a composition book available at the bookstore and many office supply stores. The journal is for in-class notes, reading notes, and problem solving. Journals are generally checked during tests. Your calendar shows all journal assignments by bolding and underlining them. You are responsible for making up missed notes from online when you are absent; see me after school if there's something within the notes you don't get. Please do not assume missed class time grants an extension on the journal due date. Your journal should have an assignment heading with this format: *assignment #, date, description*. Example: 01-01, 8/25/11, Notes: Wave anatomy. The **assignment number is especially important**.

Labs/Challenges: Labs should be interesting and fun, but the most important thing during labs is to be safe. "Horseplay" never belongs in any lab. Lab points vary according to the lab but typically come from a combination of a lab sheet (data, questions, etc.), appropriate effort during the lab and a post lab quiz. Your lab grade may be based on any or all of these items and the weighting of each these components may be based on the effort observed during the lab, including safety, respect for school property and taking responsibility for clean-up. Computer lab simulations are also lab points. Any component of the lab grade that is late by one day will be accepted for 1/2 credit.

Clickers: Individual clicker points are accumulated by total points, not by percentages. There are no make-ups for clickers and clicker points are rewarded by extra credit points, usually by unit, quarter and/or semester.

Exams:

Excused absences

I want the examination process to be fair for all students. If a student misses time in which new material is covered (not merely a review day), then the student is deserving of additional time to find out what new material was covered and prepare for the exam. **Please don't show up for class expecting an automatic extension on exam day**. Are you sure new material was covered and you're deserving of more time?

Sometimes we have a couple of days or more of review. If you don't contact me PRIOR to class to discuss an extension, please don't be disappointed or surprised if you are not eligible for a test extension.

Cell phones

No cell phones pictures without permission. Please do not conceal cell phones on your lap or slip them in and out of your pocket. If you are frequently glancing downward, it's pretty obvious what you're not on task and it will be noted. Be aware, effort-based points, such as those in homework grades, may be lost if you are not on task. You may keep your cell phone out on the desk in plain sight unless instructed otherwise. If there is a special need for cell phone use, let me know.