

General Physics

Goals

- You will focus on learning.
Points and grades often get in the way of this.
- You will develop critical thinking and problem solving skills.
This requires you to take risks, make mistakes, and try again. You should be rewarded for this and not penalized.
- You will know what you understand and demonstrate it to me.
This requires frequent, useful feedback. 8/10 is not useful feedback.
- You will be responsible for your own learning.
This requires you to have the information, tools, and freedom to do so.
- Your final grade will reflect your understanding of the standards for this course.
This requires grades to be associated with standards and you to have multiple opportunities to demonstrate your understanding.

Contact Info

Web site: <http://schoology.com/>
Email: gschmit@naperville203.org

Office: 150; Classrooms: 143, 144
Available: 1, 2 (2nd half), 5 (lunch)

Materials

- Organizer for handouts
(3-ring binder recommended)
- Flash drive
- Scientific calculator
- Pen and pencil
- Paper

Units

1st Semester

Scientific Thinking & Tools
Newtonian Mechanics:
 Constant Velocity Model
 Constant Acceleration Model
 Balanced Force Particle Model
 Unbalanced Force Particle Model
 2D Particle Model
 Conservation of Energy
 Conservation of Momentum

2nd Semester

Electrostatics
Circuits
Electromagnetism
Waves

The Details...

Instructor: Mr. Schmit

I graduated from Case Western Reserve University with my Bachelors of Science and Masters of Science in computer engineering. I earned my Masters in Teaching from National-Louis University. I have worked for 11 years as a software engineer. This is my fifth year teaching full-time. I love exciting students about science, technology, and engineering.

Purpose

The purpose of this course is to contribute to the achievement of the District's Mission, which is to educate students to be self-directed learners, collaborative workers, complex thinkers, quality producers and community contributors; and to master the learning standards that comprise this physics course. To achieve this, you will develop a conceptual understanding of our physical world. You will learn how to think critically, solve challenging problems, and reflect on your understandings. While you will become prepared for a number of careers that require the study of physics, more importantly the skills that you develop will serve you well in an incredible variety of future studies and careers.

Learning Activities and Summative Assessments

You develop understanding of the learning standards for this physics course by completing a variety of learning activities such as homework reading, questions, and problems; whiteboarding in groups; and activities. While these activities don't directly affect your grade, they are essential in that they are your opportunity to explore, discover, take risks, fail, ask questions, help each other, practice, and get feedback before having to demonstrate your understanding. You demonstrate your understanding through homework packets, weekly standards quizzes, lab practicums, lab reports, and unit exams. Your grade directly reflects your demonstration of your understanding. You will track your learning progress for each unit.

- I. **Homework Packet.** Homework is assigned in class based on our progress. Homework is both a learning activity and a summative assessment as another medium through which to demonstrate your understanding. Your first attempt at a homework problem and whiteboarding those problems in groups are learning activities. At the end of a unit, you will submit the homework packet with the final attempt completed (including sketch, diagram, or graph; list of givens; fundamental equation; equation with values substituted; and equation solved) as a demonstration of your understanding.
- II. **Whiteboarding.** Whiteboarding consists of small groups preparing on a whiteboard their solution to a previously assigned homework problem or lab activity. The group then presents their group's solution to the rest of the class and leads the class in a discussion of that solution. The questions that are asked, debated, and answered during the discussion are critical to the learning of the class. There is not time in class to figure out how to solve your group's problem; so, it is essential that you have at least made a valid attempt at solving these problems before class.
- III. **Lecture, Demonstrations, and In-Class Worksheets:** At times, I will introduce new concepts by presenting the new material with a lecture or demonstration. There are in-class worksheets for most units. Sometimes, I will model how to solve problems by leading the class through problems on the in-class worksheet. Other times, you will work in your group to solve in-class worksheet problems.
- IV. **Lab Activities.** At times, you will explore new concepts in a lab activity and we will discuss and whiteboard our observations and results after the activity. You will develop understanding of many learning standards through these activities and associated activity reports. This is an excellent opportunity to practice and receive feedback on your understanding.
- V. **Lab Practicums and Lab Reports.** You will demonstrate understanding of some learning standards through the completion of lab practicums and lab reports. Which learning standards are being assessed for that lab practicum or report will be specified. In general, you will complete one lab practicum or report for each unit.

- VI. **Standards Quizzes.** There will be Standards Quizzes approximately every week. Each quiz will provide an opportunity for you to demonstrate your understanding of multiple standards. You are allowed to use a calculator and an equation sheet. You must show all your work to earn credit. Your work, rather than the final answer demonstrates your understanding. That is, you can demonstrate understanding of a learning standard even though you obtained the wrong answer if you have the correct process. Similarly, you cannot demonstrate understanding if your process is incorrect even though your final answer is correct. Each standard will appear on two consecutive quizzes. Your score for a particular standard is the average of your scores for that standard on these two quizzes. The first standards quiz is usually more conceptual and the second standards quiz is more advanced and comprehensive. If needed, you have a final opportunity to improve your understanding and then demonstrate your understanding of a specific standard with a final quiz that focuses comprehensively on that single standard:
- You must complete corrections to **both** standard quizzes before you can take the final standard quiz.
 - You have **two weeks** after the second standard quiz to demonstrate your understanding on the final standard quiz.
 - The final standard quiz is administered on **Tuesdays** before and after school in room 144.
 - Your score on the final standard quiz replaces the scores for that standard on the first two standards quizzes.
- VII. **Unit Exam.** After opportunities to demonstrate and develop your understanding on standard quizzes and lab activities, you will demonstrate cumulative understanding of the entire unit through unit exams. Unit exams consist of a series of multiple choice questions. You are allowed to use a calculator and an equation sheet. Since you complete unit exams after all of the learning activities and at least some of the other summative assessments, there are no reassessments for unit exams.

Communication

Homework, lab activities, experiment reports, standards quizzes, and announced in class and posted on the class web site. In addition, handouts, slides, notes, and enrichment materials are posted to the class web site. The web site also hosts a discussion area in which we can ask and provide answers to questions. Please feel free to visit me in my office at any time. If you let me know in advance that you are coming, I will ensure that I'm there. If you can't arrange to talk with me in person and you don't wish to post your question on the discussion area, e-mail is an excellent way to reach me. I will respond the same night to all messages that are received by 9 p.m.

Class Expectations

- We help each other learn.
- We respect each other's learning. For example:
 - We have our materials and are learning from the bell until I dismiss the class.
 - We handle lab equipment and text books with care.
 - We accept and respect each other's differences.
 - We help create a safe environment in which we all feel comfortable asking questions.
- We have misconceptions about science that we wish to overcome.
- While you are encouraged to collaborate on assignments, all assignments must be your original work. Assignments that are identical, either in whole or in part, result in no credit. This affects everyone who has identical assignments regardless of who may have done the original work. Referrals may also be written.
- Cheating or plagiarizing will result in no credit and a referral to your Dean.
- If you are absent, you are responsible for first checking with your group to obtain handouts and notes and then also checking with me to make arrangements for extra help or to make-up quizzes, exams, experiments, or activities.

Grading

Grading is done on an individual basis, you are not competing with your classmates, and there is not a curve. Most summative assessments (Homework Packets, Lab Practicums and Reports, Standards Quizzes) are graded on a 1-4 scale:

4: Clear demonstration of understanding (with minor mistakes being allowed).

3: Significant understanding is demonstrated, but a key aspect of the solution is not.

2: Partial understanding is demonstrated (you are in the right ballpark, but misapplied some key information or concepts).

1: No demonstration of understanding.

This scale is converted to percentages as reported in iParent. A 4 corresponds to a 100%; a 3, 85%; a 2, 65%; a 1, 50%.

The unit exams are scored as a traditional percentage of questions answered correctly.

The summative assessments are weighted to comprise the overall semester grade:

Homework Packet (10%), Experiment Reports (20%), Standards Quizzes (40%), Unit Exam (30%).

The semester grade and the final exam grade is determined by percentage:

A: 100% - 90% B: < 90% - 80% C: < 80% - 70% D: < 70% - 60% F: < 60% - 0%

The cumulative grade is determined by a combination of the semester grade (85%) and the final exam (15%). Any questions about grades will be address outside of class. Please keep all graded materials until the end of semester. The most current grade that I have for you is available on the school website.