Naperville District 203
Physics Syllabus

2019 - 2020

Mission
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.

Course Description
This course is a study of fundamental physics concepts based on the Next Generation Science Standards (NGSS). Students will evaluate evidence from experiments and technology used by scientists to understand the nature of physics. Concepts and skills are reinforced by a strong emphasis on hands-on laboratory experiences and the integration of other branches of science. Constructivist methods of teaching are employed to ensure the best possible comprehension and retention of science concepts. CO-REQ: Algebra 2

Course Topics

Semester 1
- Unit 1 (1.0-1.3): Mechanics
  - Unit 1.0: Scientific Thinking & Tools
  - Unit 1.1: Constant Velocity Particle Model
  - Unit 1.2: Balanced Forces Particle Model
  - Unit 1.3: Momentum Transfer Model

Semester 2
- Unit 1 (1.0-1.3): Mechanics
  - Unit 1.4: Constant Acceleration Particle Model / Unbalanced Forces Particle Model
  - Unit 1.6: Unit 1.6: Energy Transfer Model
- Unit 2: Fields
  - Unit 2.1: Electric Fields
  - Unit 2.2: Magnetic Fields
  - Unit 2.3: Electromagnetic Induction
- Unit 3: Waves

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 readings, questions and problems, whiteboarding in groups, and lab activities. While these activities don’t significantly 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 standards quizzes, lab practicums, lab reports, engineering projects, and mid-semester and final exams. Your grade directly reflects demonstration of your understanding.

Homework: Homework is assigned in class based on our progress. Your homework solutions should be complete, detailed, and well-organized.

Whiteboarding: Whiteboarding consists of small groups preparing on a whiteboard their solution to a question or lab activity. The group then presents their 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.

Lecture, Demonstrations, and In-Class Worksheets: At times, concepts will be elaborated by presenting the new material with a lecture or demonstration. There are in-class worksheets for all units. Sometimes, the teacher 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.

**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 whiteboard discussions and activity reports. This is an excellent opportunity to practice and receive feedback on your understanding.

**Lab Practicums, Lab Reports, Engineering Projects:** You will demonstrate understanding of the NGSS Science Practices through the completion of lab practicums, lab reports, and engineering projects. Different labs will assess different Science Practices throughout the year. In general, you will complete one practicum, report, or project for each unit.

**Standards Quizzes:** There will be a standards quiz approximately every week. Each quiz will provide an opportunity for you to demonstrate your understanding of one or more standards. You are allowed to use a calculator, but 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 formative quizzes. Your score for a particular standard is the average of your scores for that standard’s quizzes.

**Retake quizzes:** The first standards quiz is usually an introduction and the second standards quiz is more advanced and comprehensive. If needed, you have a final opportunity to demonstrate your improved understanding of a specific standard with a comprehensive retake quiz.

**Mid-Semester Exam and Final Exam:** After opportunities to demonstrate and develop your understanding on standards quizzes and lab activities, you will demonstrate cumulative understanding of multiple units through a mid-semester exam and final exam. There are no reassessments for exams.

**Grading**

Your course grade will reflect what you have learned, not what you have completed.

| 85% Course content grade | 15% Final Exam |

**Course Content Grade**

- **Semester 1 and 2**
  - 45% Science Practices (labs, lab practicums, lab quizzes, engineering projects)
  - 50% Standards Quizzes
  - 5% Daily Work

**Scores**

Everything other than mid-semester exams and final exams are scored on a 4 point 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 ballpark, but misapplied some key information or concepts).
- 1: No demonstration of understanding.
- 0: No reasonable attempt.

This scale is converted to percentages as reported in Infinite Campus. A 4 corresponds to a 100%; a 3, 85%; a 2, 70%; a 1, 50%. The unit exams are scored as a traditional percentage of questions answered correctly.

**Grading Disbursement**

- A ® 90-100 %
- B ® 80-89 %
- C ® 70-79 %
- D ® 60-69 %
- F ® below 60%

**Academic Integrity**

Students will be expected to submit only original work and follow the academic integrity policy described in the student handbook.

**Reassessment Policy for Assessments**
1. Reassessments may be available for standards quizzes. Reassessments are not available for mid-semester or final exams.
2. Students are only eligible to retake a formative quiz if they score a 1 (50%) or a 2 (70%).
3. The max retake score is a 3 (85%).
4. Reassessments for quizzes must be completed within a timely manner (typically within two weeks after reviewing the quiz).
5. There is only one reassessment for a standard. Reassessments are completed outside of class time.
6. Reassessments will be a new form that addresses the same standard or Science Practice that was on the original assessment.
7. To be eligible for a reassessment, students may be required to do an alternative assignment prior to the reassessment.

Example Retake Scenarios:

**Scenario #1- Student is not eligible for retake**

<table>
<thead>
<tr>
<th>Standard Score</th>
<th>Pass 1</th>
<th>Pass 2</th>
<th>Retake</th>
<th>Final Percent calculated in gradebook</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equivalent %</td>
<td>85%</td>
<td>100%</td>
<td>x</td>
<td>92.5%</td>
</tr>
</tbody>
</table>

**Explanation:**
- Student cannot do the retake if they originally score a 3 or higher.
- Pass 1 and Pass 2 scores are averaged.

**Scenario #2- Student is eligible for retake but does not do it**

<table>
<thead>
<tr>
<th>Standard Score</th>
<th>Pass 1</th>
<th>Pass 2</th>
<th>Retake</th>
<th>Final Percent calculated in gradebook</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equivalent %</td>
<td>70%</td>
<td>85%</td>
<td>x</td>
<td>77.5%</td>
</tr>
</tbody>
</table>

**Explanation:**
- Pass 1 score allowed student to be eligible for retake.
- Student chose not to retake this standard and their Pass 1 and Pass 2 scores are averaged.

**Scenario #3- Student is eligible for retake, takes it and improves their score**

<table>
<thead>
<tr>
<th>Standard Score</th>
<th>Pass 1</th>
<th>Pass 2</th>
<th>Retake</th>
<th>Final Percent calculated in gradebook</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equivalent %</td>
<td>70% 85%</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
</tr>
</tbody>
</table>

**Explanation:**
- Pass 1 score allowed student to be eligible for retake.
- Student scored a 3 on the retake (max score) and their original score of 2 was replaced with a 3.

**Scenario #4- Student is eligible for retake, takes it and does worse**

<table>
<thead>
<tr>
<th>Final Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Standard Score</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Equivalent %</td>
</tr>
</tbody>
</table>

Explanation:
- No scores are changed because there was never an improvement in score

Communication
- Teachers make every effort to respond to emails and phone calls within 48 hours during the workweek.
- The best way to communicate with teachers is through email; however, if you haven’t received a response in 48 hours, please resend the email or call their voicemail. Your email may have gone into the spam folder.

What to do if a student needs help:
- Make an appointment with your teacher.
- Take advantage of school resources for tutoring.

Parents and Guardians – *we need your help please!*
- Parents should actively check Infinite Campus for their students’ grade.
  - The grades on Infinite Campus will be accurate only at the monthly progress report dates.
  - Infinite Campus is a communication tool until final semester grade is posted.
- Please ask your son/daughter about their school work. Please ask them for access to their Canvas account.
- Check with your individual teacher for classroom procedures, schedules, and daily class news.