

# 440 Physics Level 0

2009-2010

**Faculty Name:** Kenneth A. Magno Jr.

**Email Contact:** kmagno@mpsd.org

**Web page:** <http://www.mobius8.org>

**Room Number:** 215

**Course Email:** physics440@mobius8.org

## Course Description:

Honors Physics, 440 Physics, is intended to improve the students ability to apply mathematical and logic skills to provide solutions to physical phenomena. Students should be capable of reasoning through sequential steps to solve problems, perform experiments, and report on observations logically. Furthermore, students should be comfortable with mathematical concepts including geometry, trigonometry, and algebra. The potential exists for some elementary calculus concepts to be introduced and applied in this course. The course is designed to exceed the Massachusetts Frameworks for high school physics.

## Learning Outcomes:

*Outcomes of this Course*

- Students will be introduced to each of the following topics: Mechanics, Thermodynamics, Electricity & Magnetism, Optics, and Modern Physics.
- Students will gain new techniques for reasoning and problem solving

## Textbooks & Reading Materials:

Textbook:

*Physics: Principles with Applications* (Sixth Edition) by Giancoli (Pearson Higher Education), ISBN 0131846612

Other reading material may be assigned throughout the year which corresponds to content being covered in class. These may include excerpts from other books, scholarly articles, or academic journals.

## Grading Policies:

Course Evaluation:

The grading system used for this course is a “total points system.” Basically, each piece of student work is assigned a point value (Examples: 1 to 5 points for a Homework, 10 points for a quiz, 70 points for a test, 100 points for a project, etc.) Point values for each type of work will vary depending on the length and difficulty of material. At the end of the term the total points that student earned are divided by the total points possible for that term. This is then multiplied by 100 to give the students average for the term. Any extra credit is calculated into this average as points earned by the student. The following is an outline of the major categories of assignments students will be assigned in this course.

- Homework:

Students are expected to keep abreast of the class work by **reading the assigned material before class**. Students are encouraged to outline their readings and keep these notes in their binder/notebook. Students should expect to be turning in an assignment almost every day that

our class meets. On days when no written assignment is due, students are expected to catch up on their reading and outlining. In other words, students have homework every day whether or not there is something to pass in! Homework updates will generally occur on the class web page.

All HW assignments should be kept in a separate notebook. This is due to the fact that I will on occasion collect HW notebooks for grading purposes.

**Homework is important!** Students who do not do their homework will find themselves at a severe disadvantage during quizzes and unit tests. Most homework assignments will have a point value of 1 to 5 points.

- Quizzes:

Quizzes **are unannounced**. They are intended to encourage students to keep up with their readings and homework. Students should expect at least one quiz a cycle. These quizzes are based on recent lecture material, reading assignments, and homework questions. The point value of quizzes generally vary from 10 to 15 points.

- Tests:

At the end of each study unit students will take a comprehensive test on the subject material. These tests may include essays, true and false, fill-in, and other "objective" type questions. Tests in my courses require students to use their class work and readings to synthesis ideas from a variety of points of view and sources. Quantitative analyses including graphing and data interpretation are included whenever possible. A majority of tests will be problem solving since a large portion of class time will be spent on this concept. There are generally three unit tests each term. Each test is worth 60 to 100 points. All tests are scheduled at least 2 classes in advance. It is particularly important that students take the time to read the assigned text material and take careful notes.

All tests are returned to students with the test grade written on them. There is a place for the parent or guardian to sign these tests and return them to me. Students will be required to return the test signed by parent or guardian as a homework grade.

- Lab Reports:

Depending on the particular lab work, students will be required to write a lab report on their work. These reports are usually due 2 classes after the lab has been completed. A rubric for writing lab reports will be given to students. Each lab report will be worth between 40 and 50 points. Although students work in groups during the lab, each student is expected to produce a lab report that reflects her own work and thinking.

- Lab Tests:

Some lab work lends itself to evaluation by testing rather than lab reports. In this case students will take a short test covering the material and concepts studied during the lab. The point value of these lab tests ranges between 25 and 50 points.

- Article Summaries:

During the term students may be required to read articles from the popular press and magazines on various topics of science. They will then write a critical summary of the article reviewing and evaluating its content. A rubric for writing these summaries will be given to students at the

time of the assignment. Article summaries are worth 15 to 20 points.

- Essays and other Writing:

Throughout the term students will have an opportunity to write in several styles ranging from short critical essays, book reports, and longer research papers. The point value of these assignments varies greatly depending on their length and difficulty.

- Class Folder/Binder:

Students are be required to maintain a class folder/binder which contains their notes, homework, tests, quizzes, and other work. Organization is crucial for the success of any student! The point value of the folder/binder will be approximately the same as a quiz.

- Projects:

During each marking term there will be one long term project assigned that students will be expected to work on outside of the classroom. These are more involved than a standard lab activity and will require a larger writing component than a lab report. Most projects will present students with an engineering problem, which will require the construction of an apparatus. The project will generally connect several concepts learned in this course, utilizing the apparatus built to enhance the understanding of the material. Projects will normally be completed in small groups, and are student-guided and student-centered in nature. Each student will have an independent writing component due which will analysis the project. A rubric for these individual writings will be given to students at the time of the projects. Each project will have its own rubric and point value.

### **Additional Policies:**

#### Groups and Partners:

All groups and partners for laboratory activities and projects will be assigned by Mr. Magno. Students will be responsible for their own individual work with any group activity.

#### Late work:

Students are expected to turn in their assignments without being reminded. Unless a student misses class because of an excused absence, all homework and other assignments are expected at the beginning of class the day they are due. A breakdown is as follows:

- **Late homework is not accepted.** Late homework assignments will receive a grade of zero.
- Assignments which are worth more points such as essays, lab reports, etc. will be penalized 25% of points for every school day they are turned in late beginning with the day the assignment is due and including the day the work is actually turned in. This penalty for late work applies whether or not the student's class meets. After 3 days the grade will be a zero. (1 day late = 75%, 2 days late = 50%, 3 days late = 25%)
- It is the student's responsibility to find me and hand me their work.
- Late work will not be accepted after the next scheduled test or exam. After that, late work will not be accepted and will be recorded as a zero.

- **Work will not be accepted via e-mail.**
- Students who have been absent for an excused reason are expected to turn in their work upon their return to school.
- Extenuating circumstances will be evaluated on a case by case basis.
- Under no circumstances should a student leave their work on my desk, in my mailbox, with another teacher or student. Students must hand me their work to me in person. Students who fail to follow this policy are entirely responsible for any work lost, misplaced, or stolen. In such a case the work will be considered late when it is finally turned in to me.

Make Up Policy:

- Any student who misses a test, quiz, or other work due to an absence must make up that work as soon as possible, at Mr. Magno's convenience. This will generally occur after school in Room 215.
- The student must make arrangements for this with Mr. Magno the day they return to school after their absence, even if their class does not meet.
- Conflicts with extra curricular activities, sports practice, and work will not be considered as adequate reasons for missing a make up.
- A student who cannot make up work at this time because of extenuating circumstances must make alternative arrangements with Mr. Magno in advance.
- Students and their parents are responsible for making alternative transportation arrangements home.
- A student who does not make up their work as scheduled will be subject to a failing grade for that work.

Snow Day Policy:

- Students are expected to bring home all study materials necessary to be prepared for class upon their return if the cancellation of school due to poor weather is predicted.
- If students miss an test, quiz, or other work due to poor weather or other conditions, they should expect to complete that work during the first class after their return.

**Course Schedule:**

<b>Week # or Dates:</b>	<b>Major Topics</b>	<b>Assessment(s) (Quizzes/Exams)</b>
Term 1	Describing Motion Vectors Force and Motion Circular Motion Energy Project #1	<ul style="list-style-type: none"><li>• Questions During Lectures</li><li>• Homework Completion</li><li>• Writing Assignments</li><li>• Notebook Check</li><li>• Lab Reports</li><li>• Research Project</li><li>• Quizzes</li><li>• Tests</li><li>• Class Participation</li></ul>
Term 2	Momentum Fluids Thermodynamics Heat Electricity (Static) Project #2	<ul style="list-style-type: none"><li>• Questions During Lectures</li><li>• Homework Completion</li><li>• Writing Assignments</li><li>• Notebook Check</li><li>• Lab Reports</li><li>• Research Project</li><li>• Quizzes</li><li>• Tests</li><li>• Class Participation</li></ul>
Term 3	Harmonic Motion Waves & Sound Electric Energy Electric Current Light Lenses & Physical Optics Project #3	<ul style="list-style-type: none"><li>• Questions During Lectures</li><li>• Homework Completion</li><li>• Writing Assignments</li><li>• Notebook Check</li><li>• Lab Reports</li><li>• Research Project</li><li>• Quizzes</li><li>• Tests</li><li>• Class Participation</li></ul>
Term 4	Magnetism Nuclear Particle Physics Modern Physics Topics Project #4	<ul style="list-style-type: none"><li>• Questions During Lectures</li><li>• Homework Completion</li><li>• Writing Assignments</li><li>• Notebook Check</li><li>• Lab Reports</li><li>• Research Project</li><li>• Quizzes</li><li>• Tests</li><li>• Class Participation</li></ul>

I have read the syllabus:

\_\_\_\_\_

(Print Parent Name)

\_\_\_\_\_

(Date)

\_\_\_\_\_

(Parent Signature)

I have read the syllabus:

\_\_\_\_\_

(Print Student Name)

\_\_\_\_\_

(Date)

\_\_\_\_\_

(Student Signature)