MIHS Curriculum Night, Physics 2 Honors (periods 2 and 5)

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detailed, updated course information found by logging on to https://misd.schoology.com

Course Description:
Physics 2 Honors is the semester-long, follow-up course to Physics 1 Honors, completing a year of high school physics. Most of the topics in this course were initially addressed in Physics 1 Honors; Physics 2 Honors will build on and extended students' understanding of: constant-acceleration kinematics, forces applied to systems, energy & momentum conservation, electricity & magnetism, and electromagnetic waves. In addition to physics topics, this course also emphasizes collaboration and discussion as well as observational, analytical, and problem solving skills.

Physics 2 H is generally paired next semester with Chemistry 2 Honors, completing a year of high school chemistry begun with the Chemistry 1 Honors course.

After completing Physics and Chemistry 2 Honors students are encouraged to consider various advanced, college-level, science courses offered at MIHS, including two different Advanced Placement (AP) Physics courses, AP Biology, AP Chemistry, AP Environmental Science, and college-credit courses in Earth Science, Materials Science, and Biotechnology.

Major Topics of Study (based on the Next Generation Science Standards):

Physics/Math Toolkit
  - Experimental design, data analysis, mathematical patterns, uncertainty, graphing

Kinematics
  - Position, velocity, acceleration, equations and graphs of motion for constant acceleration scenarios, such as free-fall

Forces
  - Newton’s laws, force of friction, spring forces, connected objects (systems), Universal Gravitation

Momentum and Impulse
  - Conservation of momentum, collisions, conditions for momentum change; design challenge: collision safety

Electricity and Magnetism
  - Charges, forces, fields, potential, basic circuits, induction

Electromagnetic Waves
  - Characteristics, form and formation, interference patterns, interaction with matter, photons
Textbook:

Our text is *Physics: Principles and Problems*, by Zitzewitz et al, published by Glencoe. Student copies can be kept at home; we have a class set.

Course Website:

After logging in to Schoology and navigating to the course website, you will see the ‘materials’ page. ‘Materials’ shows a list of folders containing resources for each unit thus far. The unit folders contain a variety of digital handouts, including problem sets, solutions, lab instructions, and an ‘agendas’ page, providing highlights from each day of class.

Technology Resources:

Ipads:

I try to keep this course as ‘paperless’ as I can and encourage students to use iPads in class. I provide all handouts electronically on the course website, and students can type and write directly on these files.

Data collection:

We will also make use of computer (and iPad) based data collection with sensors, including force sensors and motion detectors.

Grading Policies and Expectations:

Purpose:

Grades in this course only partly indicate how well one has mastered the material. True mastery will probably require studying physics many times at different levels and from different perspectives. A high grade in this course will indicate that a student is ready to continue studying physics at the next level. As a result, even though most of one’s grade will reflect physics knowledge, grades in my class also include some factors related to study skills, preparedness and engagement. Students with low grades should not conclude that they are unable to study physics; rather, they are not ready at this time to continue on in physics, but students can become ready by, for example, improving study habits and math skills.

Grade Categories: Grades are weighted by category.

- **Labs/ classwork = 25%**.
  These will include any lab reports as well as preliminary lab assignments, including ‘virtual’ labs based on computer simulations.

- **Assignments/ homework = 25%**.
  Assignments include textbook reading assignments with follow-up questions, and activities assigned from digital and/or paper handouts. Often assignments will be started in class and assigned to be completed for homework. Some may be done entirely in class and others entirely at home.
Tests/ quizzes/ final exam) = 50%.

Tests will be given at the end of each unit. The last unit will end just before the final exam, so I may choose to include that test as part of the final rather than having two separate tests right at the end of the semester. I may choose to have small quizzes during a unit if I decide that rapid feedback is necessary, but I prefer not to.

I intend to offer a retakes for unit tests about a week after returning the first version of a test. The retake will be different questions covering the same material, and I will only count the higher of the two test scores; the retake score will not be penalized, and it will not affect the earlier score if that happens to be higher. There will be no retake offered for the last unit test, because there will not be time during the semester to schedule it.

Late Work:

I will accept late work for significant credit; it will always be worthwhile completing a missing assignment. Typically, I will only give about 70% credit for late assignments, depending on the assignment and how late it is.

Skyward:

I will send periodic notes via Skyward; please update your email address on the Skyward system in order to receive them.

Skyward will list any assignment without a grade as ‘missing’ after the due date, but I may not have finished grading the assignment. I will mark actual missing work with a score of zero; these are the assignments that are truly missing.

Extra Help and Tutoring:

I am available for extra help by appointment, but students are free to look for me during the 15 minutes before and after school; I will accommodate ‘walk-in’ questions whenever I can.

We are fortunate to have MIHS Physics Teachers available for free physics tutoring: Brian Hampsch on Friday mornings from 6:50 to 7:50 and Patricia Weston on Wednesdays after school from 3:15 to 4:15.

Schools Foundation:

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