**2013 Honors Physics Syllabus**

**Miami Beach Senior High**

**Instructor: Mr. Li**

**Room: 409**

**Phone: 305-532-4515 ext. 2909**

**Website:** http://edmodo.com/remboli

**Course Description**

As an introductory course, this course will cover a wide-range of physics topics such as kinematics, dynamics, circular motion, fluids, thermodynamics, optics, electricity and magnetism. **Each student must be fluent in algebra and should be enrolled in pre-calculus.**

Physics is an extremely interesting subject as it delves into the “hows” and “whys” of things you see on an everyday basis. Physics is applied to pretty much anything you can think of, from the analysis of sports (watch some Sports Science clips on Youtube), the design of a car, or even something simple like the design of your clothing.

Although this is an introductory course to physics, this will likely be one of the **MOST DIFFICULT** courses you will take in high school or even college. Be prepared to work, if you fall behind in the beginning of the course, it is essentially impossible to catch up as concepts build upon one another. Please make sure to keep on top of your reading and homework problems.

If you plan on pursuing an education in the sciences in college, you will likely be required to take physics. Physics is often used as the class to “weed” out students who do not belong in the program. A study done by UCLA researchers looked at students by ethnicity when measuring their progress in obtaining science, math, and engineering degrees. Only 33% of whites and 42% of Asian Americans graduated within 5 years. For Latinos, African-Americans, and Native Americans, the graduation percentages were 22%, 18%, and 19%. So if you plan on pursuing one of these degrees, **PLEASE MAKE SURE TO PAY ATTENTION** so that you may as much out of this class as possible and raise these percentages!

**Classroom Rules**

* No cell phone or other electronic use unless it pertains to classroom activities
* No eating in class
* The classroom must be left in the condition that you found it in (each student will start off each 9-week quarter with an extra credit “A”. Every time that the classroom is left in an unsatisfactory condition, the extra credit grade will drop by one letter
* When class begins, students should be prepared. Notebooks should be out on the desk and pencils in hand. Class will begin promptly when the bell rings **Do not come to me 1 minute before the bell and ask if you can run to the restroom, the water fountain, another teacher, or any other location.**

**Lab Rules**

* **Labs are meant to be fun and engaging, but deliberate horseplay will not be tolerated! If you are involved in horseplay, you will receive an automatic ‘0’ for the lab. You will still be required to turn in a lab report, or you will receive an additional ‘0’**
* **The lab equipment that you will be using range in the $100+ per piece of equipment. If you break any of the lab equipment due to horseplay, YOU WILL BE CHARGED FOR THE BROKEN ITEM!**

**Required Classroom Materials**

* 3 subject notebook (notes, class work/homework, labs)
* Scientific or graphing calculator (if you do not have a calculator for an exam, you are out of luck!)
* Ruler

**Notebook**

* Each student is expected to have a 3 subject notebook
* Your notebook should be done in Cornell style notes
* Your notebook will be worth 20% of your grade.
* Additionally you will be allowed to use your notebook for your homework quizzes. Quizzes are worth another 20% of your grade. This will be a HUGE difference in your final grade.

**Attendance**:

Students are expected to be in class every day. **If you have more than 10 unexcused absences for the year, you will automatically fail the year.** Refer to the MDCPS attendance regulations.

**Tardy**:

If you are tardy to class you are expected to gather all information that you have missed from your peers.

**Bathroom Passes**

You will have 3 bathroom passes per 9 weeks. If your bathroom break takes longer than 5 minutes, you will lose all bathroom privileges.

**Make-up/Late Work**

**No late work will be accepted!!!!** If you are absent and the absence is unexcused you MAY NOT make-up any work. If your absence is excused, you will be given a three-day window to turn in assignments with an admit. It is **YOUR RESPONSIBILITY** to get the make-up work. Assignments will be posted on Edmodo.com

**Cheating**

Students are expected to follow the Miami Beach Senior High Academic Integrity Policy. The policy is as follows:

**ACADEMIC INTEGRITY DEFINED**: Cheating is defined as “the giving or receiving of unauthorized information to gain an unfair advantage in your work.” Cheating includes, but is not limited to, plagiarism. Plagiarism is defined as “the act of taking the language, thoughts, or ideas of another, including works of art and music, and presenting them as one’s own without acknowledgement.”

**CONSEQUENCES OF CHEATING/PLAGIARISM**

**FIRST OFFENSE**: “F” on the assignment. “F” in conduct for the quarter. Immediate referral to administration for consideration of additional actions. All other teachers of the students will be notified as well as the student’s coaches, faculty advisors and counselors. A Parent-teacher-counselor conference must be scheduled.

**SECOND OFFENSE**: A second offense means any second cheating or plagiarism event in the same academic year. Even if the second offense occurs in a different class, it will be considered a second offense. The consequences of a second offense are: “F” for the academic year in the subject in which the second offense occurs. A referral to administration will be written for consideration of additional action.

**ADDITIONAL RULES FOR AP/IB CLASSES AND SCHOLAR’S ACADEMY STUDENTS:**

1. Any cheating or plagiarism on an IA, External Assessment or AP test will result in immediate dismissal from the IB program, disqualification of the AP and/or IB test, and dismissal from the Scholar’s Academy. This applies to first offenses.
2. Any episode of cheating, even if a first offense, may be considered by faculty/administration in deciding future AP/IB placement.
3. Any episode of cheating/plagiarism will result in notification of colleges/universities/scholarship funds to which the student applied. The teacher has the right to withdraw any recommendation letter written on a student’s behalf with notice of the cheating/plagiarism.

**Grading Rubric**

Notebook – 20% (10% for notes and 10% for lab)

Tests – 20% (2 to 3 tests per nine-weeks)

Labs – 20% (2 to 3 labs per nine-weeks)

Quizzes/Homework – 20% (Quizzes will be based on homework assignments and understanding units)

Projects – 20% (1- 3 projects per nine weeks, projects will be broken down into components)

**I will drop your lowest quiz grade every nine-weeks. To earn this drop grade, you MUST MAINTAIN A CONDUCT GRADE OF “C” OR HIGHER**

**Grading Scale**

|  |  |
| --- | --- |
| 95%-100% | 4.0 |
| 90%-94% | 3.5 |
| 85%-89% | 3.0 |
| 80%-84% | 2.5 |
| 75%-79% | 2.0 |
| 70%-74% | 1.5 |
| 60%-69% | 1.0 |

**Tentative Timeline**

**1st Nine-Weeks**

* Chapter 1 – Introduction, Measurement, Estimating (2 weeks)
  + Introduction to Physics (Sections 1.1-1.3)
    - First lab
  + Measurements/Units (Sections 1.4-1.5)
  + Converting units (Section 1.6)
    - Measuring the height of Beach High lab
  + Dimensions and Dimensional Analysis (**Section 1.8, VERY IMPORTANT**)
    - Exam 1
* Chapter 2 – Describing Motion: Kinematics in One Dimension ( 3 weeks)
  + Reference Frames and Displacement (Section 2.1)
  + Average and Instantaneous Velocity (Sections 2.2 – 2.3)
    - In-class lab: Your top speed
  + Acceleration and Motion at Constant Acceleration (Section 2.4 – 2.6)
    - Lab: Acceleration due to gravity
  + Falling Objects (Section 2.7)
    - Reaction Time Lab/Online Reaction Lab Activity
      * <http://www.bbc.co.uk/science/humanbody/sleep/sheep/reaction_version5.swf>
      * <http://www.humanbenchmark.com/tests/reactiontime/>
    - Free Fall Lab
  + Graphical Analysis (Section 2.8\*)
    - **Project: Mousetrap Car**
* Chapter 3 – Kinematics in Two Dimensions, Vectors (3 weeks)
  + Vectors and Scalars (Section 3.1)
  + Addition of Vectors, Graphical Methods (Section 3.2)
  + Subtraction of Vectors and Multiplication of a Vector by a Scalar (Section 3.3)
  + Adding Vectors by Components (Section 3.4)
    - Vector Treasure map
    - Dune Buggy Lab
  + Projectile motion (Section 3.5 – 3.7)
    - **Project: Spring-Loaded Cannon**

**2nd Nine-Weeks**

* Chapter 4 – Dynamics: Newton’s Laws of Motion (3 weeks)
  + Force (Section 4.1)
  + Newton’s First Law of Motion (Section 4.2)
  + Mass
  + Newton’s Second Law of Motion (Section 4.4)
    - Duct-tape lab
  + Newton’s Third Law of Motion (Section 4.5)
  + Weight: The Force of Gravity and Normal Force (Section 4.6)
    - Riding an elevator lab
  + Free-Body Diagrams (Section 4.7)
    - Terminal velocity lab
    - Force Table Lab
  + Problems involving Friction, Inclines (Section 4.8)
    - Friction Lab
    - **Soda Bottle Rockets Project**
* Chapter 5 – Circular Motion (1 week)
  + Kinematics of Uniform Circular Motion (Section 5.1)
  + Dynamics of Uniform Circular Motion (Section 5.2)
  + Highway Curves, Banked and Unbanked (Section 5.3)
  + Newton’s Law of Universal Gravitation (Section 5.6)
  + Gravity Near the Earth’s Surface (Section 5.7)
  + Satellites and “Weightlessness” (Section 5.8)
* Chapter 6 – Work and Energy (3 weeks)
  + Work Done by A Constant Force (Section 6.1)
  + Kinetic Energy and the Work-Energy Principle (Section 6.3)
  + Potential Energy (Section 6.4)
  + Conservative and Non-Conservative Forces (Section 6.5)
    - Ball in cup lab
    - Roller coaster lab
  + Mechanical Energy and its Conservation (Section 6.6 – 6.8)
  + Power (6.10)
* Chapter 7 – Linear Momentum (2 weeks)
  + Momentum and its Relation to Force (Section 7.1)
  + Conservation of momentum (Section 7.2)
  + Collisions and Impulse (Section 7.3)
    - **Egg Drop Project**
  + Conservation of Energy and Momentum in Collisions (Section 7.4)
  + Elastic Collisions in One Dimension (Section 7.5)
  + Inelastic Collisions (Section 7.6)
  + Center of Mass (Section 7.8)

**3rd Nine-Weeks**

* Chapter 10 – Fluids
  + Styrofoam boat lab

**Notebook Rubric**