HONORS PHYSICS COURSE OF STUDY

Mr. Modine

2019-2020

1. GENERAL GUIDELINES
   1. Be on time and ready to participate. If you are not in the classroom by the time the bell rings you will be counted tardy.
   2. Honesty.
   3. Integrity: Be responsible for your actions. Do what is expected. Failure to do what is expected of you will result in disciplinary actions.
   4. Follow directions carefully. We do labs, and failure to do so could result in accidents.
   5. Accountability: Participate in ALL activities. Sometimes activities are used as learning tools instead of lecture all the time. The more you participate the better you will understand the material.
2. MATERIALS
   1. Binder of some sort. A 5 subject spiral notebook is great!
   2. Something to write with! Pencil preferred! Not for me, but **you** will prefer one.
   3. A Scientific Calculator. You do not have to go and spend much!
   4. Cheap Spiral notebook for homework. You may use the spiral as your notebook for the class.
   5. Internet access in preferred.
   6. Quarter 1 - 20% Informal Assessments (All Count Equally)
      1. Homework
      2. Labs
      3. Quizzes
      4. Daily Activities
   7. Quarter 1 -60 % Formal Assessments
      1. 3 Tests worth 100 points each
      2. 1 Lab Project worth 100 points Formal Lab Write-Up (each semester)
      3. 5 Internet assignments worth 20 points each
      4. Online internet HW site: <http://quest.cns.utexas.edu/student>
      5. Online HW process explained later. The grade for each assignment is based on the overall percentage of each assignment, including missed questions after the first 2 assignments.
   8. Quarter 1 – 20% - Mid-Term Exam
   9. Quarter 2 – 30% Informal Assessments + 70 % Formal Assessments
   10. Final Grade – 40% Quarter 1 + 40% Quarter 2 + **20% NC Final Exam**

IV. HOMEWORK POLICIES

a. All homework and warm-ups are to be done in your **spiral notebook**.

b. They will be graded for completeness. (30% of grade)

c. Quizzes will be from these homework notebooks. (70% of grade)

d. Work is due on the quiz date. If it is late you may turn it in for ½ credit.

e. The two percentages will combine to form one grade.

1. LABORATORY WORK
   1. Labs are a very important part of Physics.
   2. Listen to instructions
      1. Written
      2. Oral
   3. Choose your lab partners wisely!
      1. **What you receive they receive.**
      2. DO NOT DO ANY LABS THAT YOU ARE NOT INSTRUCTED TO DO!
2. HONORS COURSES

Students will be expected to use the scientific method as they participate in inquiry-based activities. Students will develop creative problem solving skills using advanced mathematics as the basis. Higher thinking skills will be developed by using technology and discovery type laboratory activities. This course is aligned with North Carolina Essential Standards for Physics and will cover the following topics:

* Measurement   
    
  the course, the techniques and units of measurement, precision, accuracy, significant digits, scientific notation, metric prefixes, unit analysis, graphical analysis and interpretation
* Linear Motion   
    
  Distance, displacement, position, speed, velocity, acceleration relationships in constant speed and in constant acceleration situations, freefall, graphs of position, velocity, and acceleration
* Vectors   
    
  Trigonometry review, vector components, vector addition and subtraction, relative motion, projectile motion
* Forces   
    
  Newton's Laws of motion, inertia, mass, weight, force analysis, sliding and starting friction, air resistance, terminal velocity, inclines, Hooke’s Law**. Major Lab Portfolio Required**.
* Circular Motion and Gravity   
    
  Circular motion, centripetal force and acceleration, Newton’s Law of Universal Gravitation, orbital mechanics
* Work, Energy, and Power   
    
  Energy forms, potential energy, kinetic energy, conservation of energy, work, work-energy relationships, conservative and nonconservative forces, power
* Momentum and Impulse  
    
  Conservation of momentum, internal and external force, closed systems, elastic and inelastic collisions, impulse, systems of particles
* Waves and Interference  
    
  Wave parameters, wave graphs, wave types, polarization, principle of superposition, wave phenomena, constructive and destructive interference, standing waves, interference patterns, diffraction
* Optics (Honors)  
    
  Reflection, refraction, dispersion, index of refraction, mirrors, lenses
* Electrostatics  
    
  Charges, electric force, Coulomb's Law, electric field properties, electric potential
* Electric Circuits  
    
  Current, voltage, resistance, Ohm's Law, series and parallel circuits, electric power**. Major Portfolio Required**.
* Magnetism (Honors)  
    
  Magnetic field properties, magnetic materials, magnetic force, charge and current in the presence of magnetic fields, magnetic induction

**This is a class where you will be getting up and doing science. Sitting and doing nothing in class is unacceptable. You are accountable for your learning too. The more you participate…..the easier this class will be.**

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