**Physics Syllabus 2012 Mr. Groff**

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**INTRODUCTION:**

Welcome to intro physics. This will be your first physics class in your life but please don’t be intimidated. The concepts you will learn in this class will develop your problem solving and analytical skills while also helping you understand the world around you.

This course is tougher than most, not because of the math involved but mainly because you have to look at the big picture in order to solve the problems. It is critical that you keep up with homework, complete your reading assignments, and have an overall positive outlook on this course. You must not be discouraged when you get confused, but instead tackle the challenging topics.

We will move relatively quick in this class since we have to cover a breadth of material in such a short time, we only have 46 min class periods! It is critical that you are always prepared for class each and every day. I think that working together with your classmates outside of class is great, however I also think that copying answers is a bad idea. You need to understand that material in your own right if you are to be successful in this course.

**Text: Physics: *Principles and Problems* Glencoe, 2005**

COURSE OUTLINE

**FIRST SEMESTER**

UNIT 1

Tools, Measurement, Measuring Change, Manipulating Formulas, Graphing, Graph Analysis.

UNIT 2

Velocity vs. Acceleration, Motion Diagrams, Constant Acceleration, Velocity Acceleration Graphs.

UNIT 3

Forces (vectors) in 1 and 2 Dimensions, Interaction Forces, Friction Forces

UNIT 4

Motion in two dimesions, Projectile motion, Circular motion, Law of Universal gravitation, Orbits, Rotational Motion

UNIT 5

Momentum, Conservation of Momentum, Impulse, Energy and Conservation of energy.

UNIT 6

Thermal energy, Temperature, Heat transfer, Specific heat, Laws of thermodynamics, Fluids, Gas Laws, Buoyant Force, Archimede’s Principle.

**SECOND SEMESTER**

UNIT 7

Vibration and waves, Wave behavior, Oscillations and Sound.

UNIT 8

Fundamentals of Light, Polarization, Reflection and Mirrors, Refraction and Lenses.

UNIT 9

Interference and Diffraction

UNIT 10

Static Electricity, Elec. Charge, Elec. Fields

UNIT 11

Current electricity, Voltage, Resistance, Series vs. Parallel.

UNIT 12

Magnetic Fields, Forces cause by magnetism, Electromagnetic Induction

UNIT 13

Time Dilation, Length Contraction.

**Homework**

This is a broad category as homework can come in many shapes and forms, from practice problems, reading assignments, lab write-up’s etc. My homework will be a critical part of your understanding of the class. If you keep up with your homework then you keep up with that class, I believe this very much. I encourage working together to assist each other in solving the problems but this doesn’t mean giving each other answers! It is important you know how to solve the problems yourself.

**Class Participation**

I am big on work ethic. When you come to my class I expect you to come in with the attitude “lets get things accomplished!”. We only have 46 min!, so making sure we get down to business is important. You can do this by always being prepared with necessary daily class materials, and by having a positive attitude and an interest in what we are learning. You were not forced into this class; you wanted to take it, so enjoy yourselves!

**Labs**

All labs require students to turn in their own written work. You will achieve this by keeping your own lab notebook for data collection, analysis, and lab reports. It is very important to keep a very neat lab note book, this will help immensely when it comes to writing formal lab reports. If you do not complete your lab in class, it is up to you to do so in your free time, such as a study hall or even lunch.

**Tests**

This is the largest single chunk of your grade so they are very important. Each unit will be followed by a formal test. The format of each test will be related to the format of the ACT. Please feel free to see me with any questions you have regarding tests. It is critical to not miss school on tests days if at all possible.

**Projects**

Projects are always going to be graded based on a rubric of my choosing. This will be outlined on the date you receive the project. I will also take group peer evaluations with group based projects as an attempt to insure fairness of workload and to assist in the grading process.

**Flexibility**

I know that you students have very busy lives, with extracurricular activities, school clubs and just general family things. I am flexible with certain assignments but please do not make this a habit. If it is an emergency I will allow extra time but do not mistake this for a get out of jail free card.

**Classroom Expectations/Activities**

I will do my best not to lecture too much. I want this instead to be student centered class will a lot of discussions, group work and collaboration as a group in order to solve and understand the concepts discussed in class.

I expect you to:

* + Come to class prepared and on time.
  + Use class time wisely
  + Always be respectful of each other as if they are a professional colleague of yours.
  + Be responsible for your own learning
  + Always come in to class with a positive outlook, ready to learn.

**REQUIRED MATERIALS- Daily**

* Binder with organized sections by unit in order to keep all important materials (homework, quizzes, tests) in chronological order.
* Graphing calculator
* Pencil-I dislike pens when doing physics work, you will have to erase!
* Separate lab notebook portfolio, organized in chronological order.
* Notebook for class notes and homework.

**LABS BY UNIT**

**FIRST SEMESTER**

UNIT 1

Data Collection and Graph Building/Analysis

UNIT 2

Velocity- Cars, Time and Distance

Acceleration- Carts, Fans and Time

UNIT 3

Measuring Sliding Co-efficient of Friction with a ramp.

UNIT 4

Projectile Motion

Phet Simulations

Projectile Predictions

UNIT 5

Impulse/Momentum with Vernier

UNIT 6

Buoyancy Lab

SECOND SEMESTER

UNIT 7

Creating Nodes/Anti-Nodes using sin-wave generation.

UNIT 8

Lasers, Lines, and Angles of reflection

UNIT 9

Diffraction using CD’s

UNIT 10

Electrostatics with Tape

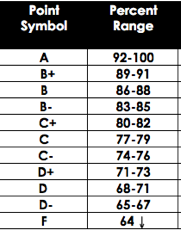
UNIT 11

Building Circuits

UNIT 12

Bar Magnets and Compasses

**Grading Scale:**



**Student Information Sheet**

**NAME:**

What skills do you feel are your strongest in relation to this class?

What are you planning on doing in 5-10 years?

Anything else I should know about you?

**SIGN OFF**

I have read and understand the above syllabus and will do my best to meet all expectations. I will always strive to work hard and have a positive attitude while in class. I realize that success in this class is up to me first and foremost.

**Student Signature: Date:**

**Student e-mail: Parent Phone:**

**Parent Signature**

**Parent e-mail:**