

W E L C O M E T O W . R . H . S . !

WELCOME TO

# FRESHMAN PHYSICS!

FRESHMAN PHYSICS CPA 2011-2012

MR. NICASTRO

WHAT DO EACH OF THESE HAVE IN COMMON?

rainbows      plasma tv's      thunder storms

curve balls      microwave ovens      skyscrapers

"iPods"      jump shots      rockets

racecars      guitars      exploding stars

black holes      skateboards eyeglasses

fireflies      satellite radio      blood pressure

karate      global warming      atomic clocks


time travel      radiation      fuel cells

submarines      computers      auroras

ballet shoes      baseball bats      rock concerts

elevators      trombones      rollercoasters

electron microscopes      **AND MANY MORE!!!!**



*"I have no special talents. I am only passionately curious."*

Albert Einstein  
(1879 - 1955)

bicycles      the earbridges      airplanes

light bulbs      hurricanes      electric eels      earthquakes

radar guns      cell phones      MRI's      gyroscopes

sunburns      swimming      atom bombs      motors

homeland security      athletic training and performance      electron microscopes

**THEY ALL USE PRINCIPLES OF PHYSICS!!**

## F.A.Q.'s:

### What IS physics?

Physics is the study of the interrelationship between time, space, matter and energy.

### How is physics different from all other sciences?

Physics establishes the "ground rules" (laws) that all other sciences operate by. It is NOT restricted to any one size, scale, or type of force.

### Why should I take physics?

Since physics is the foundation for all sciences, it is only logical that understanding physics will be important not only in our understanding of other sciences, but mostly because physics is *all around us* - our everyday world is filled with applications of physics!

### Isn't physics usually taught to seniors in high school?

Freshman Physics is designed to be understood by 9th graders with basic reading and math skills. It is CONCEPTUAL, which means that the emphasis is more on concepts rather than advanced mathematics and complex problem solving.

## GOALS:

1. To give you an understanding of, and appreciation for the study of physics, and how it affects our everyday world.
2. To show you how science (physics in particular) “works,” that is, how observations lead to questions, which lead to hypotheses, experiments, data collection and analysis, and logical conclusions. How and why theories develop and change.
3. To demonstrate that “patterns” exist in nature, and how just a few basic principles can help us understand the universe.
4. To develop the foundation for a “science literacy” that will be important for the rest of your life.
5. To prepare you for the Physics MCAS Test in June, and , beyond that , for all future courses you will be taking in science.

## GENERAL CLASSROOM RULES

**Behavior:** You are high school students (practically adults), and I expect you to behave as such. Respect should be accorded to me and to your fellow students at all times. Always demonstrate your good manners. Constant interruptions, rudeness, insulting or hurtful language will not be tolerated.

**Always, treat others as you wish to be treated by others.** School rules, as presented in the handbook, apply.

**Participation:** Active participation is GREATLY ENCOURAGED in this class. That means I'll expect you to share your ideas and listen thoughtfully while others share theirs. Part of participation is preparation (see below). I keep track, and each term, you'll earn a grade based on participation/preparation. This also covers your contribution to your lab group, and daily focus.

**Preparation:** You must come to class (**on time**) prepared to work every day. This means you will show up with a writing utensil of some sort (pen, pencil, crayon, etc.), a notebook, calculator and textbook. Also, any assigned homework, worksheet(s) , and your BRAIN fully engaged and ready to work. You should be in your seat (not at the door) when class begins. Please **KEEP ALL HANDOUTS, WORKSHEETS, QUIZZES, LABS, etc.** in your notebook or binder!!

**Assignments:** All assignments (including reading assignments) are to be completed on time. When absent, it is your responsibility to approach me about missing work. **All missing work must be made up in a timely fashion (see Student Handbook).** **Work not made up within those guidelines will be recorded as a 0.** If you know you'll be absent, you should plan to bring whatever book we're working on home and read ahead. *For long-term projects, absence is no excuse for lateness.* Unless otherwise specified, I do not accept work after the due date. ***If you are in school for any part of a day (or on a field trip) when something is due in class, you must get your work to me (in my hands) at some point during the day.*** Papers should be typed or neatly written, double-spaced. *Homework is due on the date assigned - I do not accept it late. For every two missed homeworks, you will lose 1 point from the final term grade (after three missed in the term, I start deducting on the odd rather than even miss).*

**Videos:** Any videos we view in here are part of the curriculum and you are responsible for them. If you are absent, you must make arrangements to see the film. Your head should NOT be down on the desk, **YOU SHOULD** be watching attentively - often, I will hand out specific questions before viewing about what you are watching, to help you focus on important points.

**Grading:** Each quarter, your grade will be calculated by the following distribution:

Tests (2): 20% each.....	40%
Quizzes (5 - drop lowest): 5% each.....	20%
Classwork..(includes labwork).....	20%
Homework.(includes lab reports).....	10%
Participation/Preparation.....	10%

### PENALTIES:

Late for class:	2nd offense - DHall rm D205 3rd offense - Office DHall
Misbehavior:	1st offense (after warning) DH205 2nd offense - Office DHall
Class Cut: -	Check Student Handbook

**Cheating and Plagiarism** are academic crimes. Don't do it. Be careful to credit all intellectual property (including ideas, images, phrases, etc. you pick up from other sources - SparkNotes, the Internet, etc. - even if you do not directly quote from the original source), or you will receive a “0” - no arguments. **Please understand that copying someone else's work falls under this category.** Plagiarism is also reported to administration, and it becomes part of your academic record.

**Parental Contact:** If you or your parents need to contact me for any reason, the best way to do it is through my school email. If you email me, I will get back to you as soon as I can.

My school email address is: **nick\_nicastro@wrsd.net**

If your parents request a meeting with me, they should call the Guidance Office and speak to your counsellor to make the arrangements.

# Topics By Quarter

TEXTBOOK: *CONCEPTUAL PHYSICS* (HEWITT)  
REPLACEMENT COST: \$100

Please take CARE of your textbook - cover it; USE it!

QUARTER	TOPIC(S)	CHAPTER(S)
<b>1.</b>  20%	Physics, Science, intuitive/counterintuitive Scientific Method, Data Collection and Analysis, Accuracy & Precision.  Motion: speed (average, instantaneous) velocity, acceleration, free fall motion in a circle, Aristotle, Galileo, vectors,	1  2, 3
<b>2.</b>  20%	Newton's Laws of Motion: 1st Law - Law of Inertia, mass, weight 2nd Law - Law of Acceleration, forces 3rd Law - Law of Action/Reaction, action force, reaction force, free body diagram, gravity  Momentum, Impulse, explosions, Conservation collisions (elastic/inelastic), recoil, rockets	4, 5, 6, 7, 12
10%	Midyear Exam - based on 1st & 2nd quarter	
<b>3.</b>  20%	Energy, Work, Power, Conservation Thermal Energy, Transfer of Energy, Temperature, Heat, Thermodynamics Properties of Matter. Waves: Theory, Types, mechanical, sound non-mechanical, radiation, light, optics	8, 17*, 18*, 19*, 20* 21, 22, 23, 24*, 25*, 26*, 27*, 29*, 30*, 31*
<b>4.</b>  20%	Electricity, static, current, DC, circuits, series, parallel, combination, Ohm's Law, magnetism, house circuits	32, 33, 34, 35, 36, 37
10%	Final Exam - based on 3rd & 4th quarter	FRESHMAN PHYSICS MCAS