

Williamston High School Physics

School Year 2015-2016

Instructor: Dan Keith - Room F5

Contact information:

Phone 517-655-2142 Ext 7280 Planning period – 4th

Email: keithd@GOWCS.net

Classroom Web site www.NeatScience.com

Course Description for Physics Prerequisites: Physical Science and Biology; B in Algebra I

Physics is an advanced science course for students who are college bound or will be pursuing a technical career. It requires a good understanding of Algebra II and also uses some trigonometry. While Chemistry is not a prerequisite, it should be understood that this is a demanding course and students typically spend 4-7 hours per week outside of class. The first semester focus of the course will be the study of kinematics, which includes motion, friction, projectiles, machines, work, and energy. The second semester concerns the study of waves, sound, light, magnetism, and electricity.

Philosophy

Physics is a difficult but rewarding course. It does not require lots of memory work, it requires that your mind be agile. Most of the time I will give you all the equations that you need, as well as constants. It will be your job to figure out how to approach the problem, what parts are essential, which equations to use, and then to solve the problem. Showing all of your work is required.

Many students do not do as well in physics as they have done in other science courses. This often panics students who are trying to keep a 4.0 grade average. Physics requires you to be a thinker and problem solver and most of your grade will be based on your problem solving ability, on tests and quizzes. This year will be a very busy one for most of you. There may be times when you are tempted to use another student's solutions to problems to get homework in on time but this will immediately put you behind. You will only get as much out of this course as you put into it.

It is my desire that every student in my classes be successful and that each student will learn as much as they can. I believe that every student has the right to work in peace, in an atmosphere that is conducive to learning, and to be treated with the same respect that I wish to be treated. If a student decides not to participate in the course work for that particular day, that student does not have the right to disturb the other students in the class who want to work.

Physics is often remembered by students as their favorite science course and this could be the case for you as well. I will do my best to make this course as interesting and as fun as I can. I will work hard and I expect you to work hard as well.

Directions on How to Get Help and Make-up Policy:

For additional help, make-up, etc., I am usually available before and after school in Room F5. Please get help right away before serious problems develop.

1. If you are absent, it is your responsibility to get and make up any assignments missed. **If you are present on the day before a test and absent on test day, the test must be made up on the day you return.** Homework which was due on the first day of an absence must be turned in on the day you return.
2. **Being absent for a review does not excuse you from a test,** the instruction has already been done.

3. Special arrangements will be made for longer periods of absence.
4. Lab make-up: Because of equipment and space limitations, labs must be made up within four days after the class does the lab.
5. Re-do's and Re-tests are not a common part of this class but may be offered, at my discretion.
6. Extra credit will sometimes be allowed for students who have completed all of their work but are still in need of a "Grade Boost". This type of work is usually quite difficult and time consuming and will be designed on an individual basis. Limited to once per semester.
7. Two Tiger Passes will be issued to each student to allow them to turn in late work for full credit. Unused passes can be exchanged for some extra credit at the end of the semester.

Course Materials

Textbook: Physics - Principles and Problems (Online version is also available on Neatscience.com)

Supplies: Bring your notebook and calculator to class every day. A three-ring binder works best but you can make up your own mind. **Spiral Binders do NOT work well in this class.**

Labs and Lab Safety: Students are expected to participate in lab activities. These activities are designed to help with content understanding and to give students the experiences needed in the processes of science investigations. Students are expected to behave in an appropriate manner and to follow the rules and expectations outlined in the **Lab Safety Contract** which each student must have completed and which must be signed by a parent or guardian. (this was part of the mandatory school forms packet)

Online Resources: I have my own domain name on the Internet www.NeatScience.com and I will post all class notes here as well as homework. There are also lots of helpful links, just follow the **Physics** link.

Behavior Expectations

- Respect the right of the other students to study and work.
- Food is not allowed (unless I give it out). Some drinks are allowed in non-lab times.
- All lab equipment should be replaced from whence it came.
- All lab materials should be handled in a safe and adult manner.
- School policies are still in effect while in this class.

Consequences will be in line with the Student Handbook

Tardy Policy (Students should have been in their seat, and be ready for work when the bell rings)

1. Warning
2. Warning with side talk
3. Detention of first five minutes of student's lunch (does not have to match my lunch) and phone call home with email follow-up.
4. Half hour detention with phone call home and email follow-up.
5. Office Referral

Instructions for Graded Work

Written Work

- All written work is expected to show careful effort. Leave margins. Write legibly. Use only 8.5x11 inch white paper with clean edges.
- All paper handed in must have: Your name (first and last), date, and period in upper right corner.
- Notebook should be chronological and have the **ability to have handouts placed anywhere within the notes**. A spiral binder is not a good choice.

Homework: There will be homework almost every night. Most homework will be assigned from the book or will be given in class. Homework is usually expected to be completed for the next class period. There will also be homework assigned using the *Lon-Capa* online homework system. I will let you know if the *Lon-Capa* homework will need to be completed online. Homework is an essential part of being a successful student in physics. If you do not actually complete the homework with your own thought processes you will probably be behind for the next bit of work.

You will also be required to use a program called *Vernier Logger Pro 3*, which is a data analysis program that will be given to you to load onto your computer. This program will also be available on classroom computers and in the library.

Final Exam(s): There is a semester exam that tests your understanding of the objectives of the course based upon the state and district standards.

Grading System

Students can see their grades daily on PowerSchool and can also see their posted grades in the classroom by their student number.

Grading scale:

The grading scale at Williamston High School is as follows:

93 or up	= A	73-77	= C
90-92	= A-	70-72	= C-
88-89	= B+	68-69	= D+
83-87	= B	63-67	= D
80-82	= B-	60-62	= D-
78-79	= C+	59 or lower	= F

Detailed Information about the Grading System

Semester Grade: The semester grade is determined by averaging all academic work done in the semester (85%) with a cumulative semester exam (15%).

Grading: will be done on a point scale. All points for assignments will be added together and then divided by the total to get your average. School grading policy is in effect for the 4.0 system. Parents and students should check *PowerSchool* often to keep up with grades.

Online Grading Program: Students are expected to periodically check their grades online (<http://ps.gowcs.net/public>). Grades left blank are assignments that need to be made up. Grades with a zero and a designation of "M" for missing can also be made up. The zero is being used to show you what your grade will be if you fail to make up that assignment. If the grade just contains a zero, then that is the final grade for that assignment. Occasionally, there may be an assignment that a student misses and is not required to make up. In this case, a designation of "Ex" for exempt will appear.

Physical Science Course Goals, Content, and Big Ideas:

We will be using the Michigan Physics Content Expectations, which is available online, in much more detail, at:

http://www.michigan.gov/documents/Physics_HSCE__168208_7.pdf

An important part of this course is to understand the role of physics in technology, history and everyday living. I will be bringing in many interesting items to help with this.

Physics Content Expectations Outline

STANDARD P1 Inquiry, Reflection, and Social Implications

- P1.1** Scientific Inquiry
- P1.2** Scientific Reflection and Social Implications

STANDARD P2 Motion of Objects

- P2.1** Position — Time
- P2.2** Velocity — Time
- P2.3x** Frames of Reference

STANDARD P3 Forces and Motion

- P3.1** Basic Forces in Nature
- P3.1x** Forces
- P3.2** Net Forces
- P3.3** Newton's Third Law
- P3.4** Forces and Acceleration
- P3.5x** Momentum
- P3.6** Gravitational Interactions
- P3.7** Electric Charges
- P3.7x** Electric Charges – Interactions
- P3.p8** Magnetic Force (*prerequisite*)
- P3.8x** Electromagnetic Force

STANDARD P4 Forms of Energy and Energy Transformations

- P4.1** Energy Transfer
- P4.1x** Energy Transfer - Work
- P4.2** Energy Transformation
- P4.3** Kinetic and Potential Energy
- P4.3x** Kinetic and Potential Energy - Calculations
- P4.4** Wave Characteristics
- P4.4x** Wave Characteristics - Calculations
- P4.5** Mechanical Wave Propagation
- P4.6** Electromagnetic Waves
- P4.6x** Electromagnetic Propagation
- P4.8** Wave Behavior – Reflection and Refraction
- P4.8x** Wave Behavior – Diffraction, Interference, and Refraction
- P4.9** Nature of Light
- P4.r9x** Nature of Light – Wave-Particle Nature (*recommended*)
- P4.10** Current Electricity – Circuits
- P4.10x** Current Electricity – Ohm's Law, Work, and Power
- P4.11x** Heat, Temperature, and Efficiency
- P4.12** Nuclear Reactions
- P4.12x** Mass and Energy