

KAP/AP Physics
Mr. Chute
Course Procedures & Expectations 2006-2007

Course Goals: Physics is the study of the physical world. We will be exploring the fundamental laws that govern natural phenomena and use those laws to develop theories that can predict the results of future experiments. Applying these laws in the solution to everyday problems will also be a major goal of this course. This course is designed to be the equivalent of a college-level first semester Physics class. Students who successfully complete this class will earn a semester of college credit.

Requirements: A thorough understanding of Algebra and (especially) Geometry is essential to solving many problems. Additionally, ALL students should be enrolled in Calculus, AP Calculus AB or AP Calculus BC.

Text: Physics for Scientists and Engineers, 6th edition, by Raymond A. Serway & John W. Jewett, Jr.

I suggest you cover it. Additionally, bring this book with you to every class unless otherwise directed.

Additional Requirements:

1. A graphing calculator
2. Pencil (or pen), paper & ruler (for HW problems)
3. Notebook or folder (I suggest a 3-ring binder, at least 1.5 inches with divisions “Homework”, “Quizzes”, “Tests”, and “Notes”,
4. Lab Book (I will provide you a notebook to keep all of your labs together).

Student Expectations:

1. Be ready to begin class when the bell rings.
2. Participate—Science (and especially an AP class such as this) is not a course you can sit back and expect to grasp concepts just by watching me. All students are expected to participate and be actively engaged in class.
3. DO HOMEWORK!!! Practice is essential to understanding Physics. There will be challenging problems that we need to go over, and I understand that. However, I expect you to have made an honest effort with the homework before coming to me for assistance. I suggest a study partner, too.
4. Ask questions. One of the most important ways to learn is from misconceptions. Asking questions alleviates this.
5. You are expected to do your own work and be responsible for your own learning.

Tardies: All tardies are unexcused unless accompanied by a written pass from another teacher. If you accumulate tardies, you will lose points from your participation grade (see below).

Grading: Your grade will be determined by the following percentages:

Participation 5%
Homework: 10%
Quizzes: 20%
Exams: 50%
Labs: 15%

Quizzes: Quizzes are given to determine how successful you are at mastering the material in class. They will cover homework problems and/or concepts presented in class. You should expect one a week. All quizzes should be taken in pencil.

Exams: You should expect two per nine weeks—one midway through the quarter and one at the end of the quarter. Exams will always be announced and will consist of short answer/analysis and problems similar in concept to the ones you saw in the homework. All exams should be taken in pencil.

Labs: One of the most important parts of the learning process is demonstrating your evidence of learning. Labs are an excellent way to determine this. I will always announce when we will be having a lab. Please be here on lab days. If you are absent, you will need to make up the lab (before school, after school, during a study hall or some other agreed time). For lab days, we will be in the Physics room.

Teacher Expectations:

1. You should expect me to create a classroom environment conducive to learning at all times, where everyone feels safe and comfortable participating. Distractions and disciplinary issues will be dealt with swiftly and according to the policies outlined in the student code of conduct.
2. You should expect me to actively involve you in Physics and make it worth your while. While it is the student who is responsible for his/her own learning, it is the teacher's job to make the material accessible.
3. You should expect me to be available to you if you need assistance outside of class. I can help you on the "off-periods" and during my conference period. Additionally, there may be some days I will be available 7th period. Please see me the minute you need help—do not wait until the day of a test or a quiz to decide you are lost.

KAP: This stands for Kenyon Academic Partnership. You have the opportunity to enroll in this class and get college credit for freshman Physics. Cost to enroll is \$100 for

the entire year. Credit transfers to any Ohio college except Case-Western Reserve. Students may wish to take advantage of this opportunity in lieu of taking the AP Physics tests in the spring. Successful completion of this course means a “C” average or higher for the year.

Exams: Physics B
 Physics C: Mechanics
 Physics C: Electricity & Magnetism

KAP/AP Physics--Course Outline
(not necessarily in this order)

I. Mechanics

- A. Kinematics (including vectors, vector algebra, components of vectors, coordinate systems, displacement, velocity & acceleration)
 - 1. One-dimensional Motion
 - 2. Two-dimensional Motion
- B. Newton's Laws of Motion
 - 1. Static Equilibrium (First Law)
 - 2. Dynamics of a Single Particle (Second Law)
 - 3. Systems of two or more bodies
- C. Work, Energy & Power
 - 1. Work and The Work-Energy Theorem
 - 2. Conservative Forces and Potential Energy
 - 3. Conservation of Energy
 - 4. Power
- D. Systems of Particles and Linear Momentum
 - 1. Impulse and Momentum
 - 2. Conservation of Momentum and Collisions (1-D & 2-D)
- E. Circular Motion and Rotation
 - 1. Uniform Circular Motion
 - 2. Angular Momentum and its Conservation
 - 3. Torque and Rotational Statics
- F. Oscillations and Gravitation
 - 1. Simple Harmonic Motion (dynamics and energy relationships)
 - 2. Mass on a Spring
 - 3. Pendulums and other Oscillations
 - 4. Newton's Law of Universal Gravitation
 - 5. Orbits of Planets and Satellites
 - a. Circular

III. Electricity and Magnetism

- A. Electrostatics
 - 1. Charge, Fields and Potential
 - 2. Coulomb's Law & Field and Potential of Point Charges
 - 3. Fields and Potentials of other charge distributions
 - a. Planar
- B. Conductors, Capacitors and Dielectrics
 - 1. Electrostatics with Conductors
 - 2. Capacitors
 - a. Parallel Plates
- C. Electric Circuits

1. Current, Resistance and Power
 2. Direct Current Circuits with Batteries and Resistors Only
 3. Capacitors in Series
- D. Magnetostatics
1. Forces on Moving Charges in Magnetic Fields
 2. Forces on Current-Carrying Wires
 3. Fields of Long Current-Carrying Wires
- E. Electromagnetism
1. Electromagnetic Induction (Including Faraday's Law and Lenz's Law)