AP Physics C: Mechanics Syllabus

Course Description

AP Physics C: Mechanics is equivalent to a first-semester calculus based college physics class required of students majoring in the physical sciences or engineering. Either prior or concurrent enrollment in calculus is necessary to be successful in AP Physics C: Mechanics. This course is designed to prepare students for the AP© Physics C: Mechanics Exam given in May. Students should have already completed a course in introductory physics. The course will cover instruction in the following six content areas: Kinematics, Newton's Laws of Motion, Energy, Momentum, Circular Motion, and Oscillations. AP Physics C: Mechanics uses student-centered learning and self-discovery to promote higher level thinking skills. Class discussions will lead to an open-ended question to be answered. Students will work individually or in cooperative groups to formulate an acceptable answer to the question posed. Practical application of the concepts to everyday phenomenon will be utilized to develop critical thinking skills. The course also includes a laboratory component constituting a minimum of 20% of instructional time. Students are encouraged to keep copies of their laboratory work for use in determining college credit or placement. (http://apcentral.collegeboard.com)

Content Outline: Percentages represent goals for the AP Exam

Kinematics	18%
Newton's Laws of Motion	20%
Work, Energy, & Power	14%
System of Particles, Linear Momentum	12%
Circular Motion & Rotation	18%
Oscillations & Gravitation	18%

Time Requirement

1. At least 275 minutes per week.
2. A minimum of one lab per week or equivalent.
3. Students should spend at least 5 hours a week in individual study outside of the classroom.

School Resource Requirements

1. A college-level physics textbook for the teacher and each student
2. Each teacher and the students have access to the *AP Physics Teacher's Guide and the 2004 AP Physics C Mechanics Released Exams.*
3. Access to materials, equipments, and time adequate to conduct college-level physics investigations outlined in the teachers guide.

Textbook

College Board. *AP Physics Teacher's Guide and the 2004 AP Physics C Released Exams.*
Serway, Raymond A., and John W. Jewett, Jr. *Physics for Scientists and Engineers with Physics Now and InfoTrac.* New York: Brooks/Cole. (Replacement Cost: $131)

Course Outline

DIMENSIONAL ANAYSIS & VECTORS Chapters 1-3 *1 week*	Scientific notation Dimensional analysis Scientific Method SI units Graphing
KINEMATICS Chapter 4 *2 weeks*	Vector algebra Displacement, Velocity, & Acceleration 1D & 2D Kinematics Projectiles
NEWTON'S LAWS OF MOTION Chapter 5 & 12 *3 weeks*	Statics Dynamics Systems of 2+ Objects
WORK, ENERGY, & POWER Chapters 7 & 8 *2 weeks*	Work-Energy Theorem Potential Energy (Gravitational & Elastic) Kinetic Energy Conservation of Energy Rate of Work
MOMENTUM & COLLISIONS Chapter 9 *3 weeks*	Center of Mass/System of Particles Impulse 1D & 2D Collisions Conservation of Linear Momentum
CIRCULAR MOTION & ROTATION Chapters 6, 10, & 11 *3 weeks*	Torque Rotational Statics Conservation of Angular Momentum Uniform Circular Motion Rotational Kinematics
SIMPLE HARMONIC MOTION Chapter 15 *2 weeks*	Mass on a Spring Pendulums & Oscillations Simple Harmonic Motion (dynamics & energy relationships)
GRAVITATION Chapter 13 *1 week*	Kepler's Laws Orbits of Planets & Satellites ◆ Circular ◆ General

Evaluation

Exams	50%
Labs	20%
Quizzes	5%
Homework	5%
Final	20%

Grading Scale: A: 90 – 100 B: 80 – 89 C: 70 – 79 F: 0 – 69

Provision for Improving Grades

1. Opportunities designed to allow students to recover from a low or failing cumulative grade will be allowed when all work required to date has been completed and the student has demonstrated a legitimate effort to meet all course requirements including attendance.

   Students should contact the teacher concerning recovery opportunities. Teachers are expected to establish a reasonable time period for recovery work to be completed during the semester. All recovery work must be directly related to course objectives and must be completed ten school days prior to the end of the semester.

2. Teachers will determine when and how students with extenuating circumstances may improve their grades.

Recovery is available to students with a cumulative grade below 74% after a minimum of two (2) major grades. The maximum grade a student can earn for a recovery activity is 70%. There will be only one recovery opportunity per failed major assignment or test. The individual teacher will determine the means of recovery. **THE STUDENT MUST INITIATE THE PROCESS WITHIN FIVE (5) DAYS OF NOTIFICATION OF A FAILING GRADE ON A MAJOR ASSIGNMENT/TEST.**

Laboratory

Laboratory investigation will include a variety of styles from prescribed activities to open-ended guided inquiry investigations requiring critical thinking skills. Students will work in groups of two or three to complete each experiment. Laboratory will account for 20% of in-class time and therefore will account for 20% of the overall grade. Students are required to keep a lab notebook with all the labs. All investigations require data collection. Repeated tests will be completed to obtain a representative sample set. Error analysis will also be calculated. After an analysis of the data with graphs, trends, and trend-lines conclusions can be drawn. The lab grade is based on lab reports and written examinations utilizing data obtained through experimentation.

Exams & Quizzes

Exams and quizzes are modeled after the AP Exam. Exams and quizzes will be either multiple choice, free response, or a combination of both. Quizzes will follow the same format as exams, but will cover less material than a typical exam.

Class Websites

This class has a website where class information may be obtained. At the class website students can find the course syllabus, assignments, worksheets, and other pertinent information. Most everything I handout in class can be found on the website. Two other useful websites are the online textbook and WebAssign. WebAssign is an online homework site that offers students a few chances to work a correct answer. However, there is a cost ($10) associated with this site. Students who opt not to partake in WebAssign must turn in

the homework with all its associated work. In this case the student has only one opportunity to answer each question correctly. Below are the links to the class website, textbook and WebAssign.
www.geocities.com/jakspiel (Class website)
www.webassign.net (WebAssign homework)

Expectations

1. Use appropriate and nonoffensive language.
2. Arrive promptly with needed materials, and stay on task until excused by the teacher.
3. Remain seated and listen attentively while others are speaking.

Absences and Makeup Work

- Missing school is bad enough, but the #1 reason for low grades is failure to turn in assignments. If you are absent the day an assignment is given, you have no more days extra than the number of days you missed to submit that assignment. For example, if you are absent three consecutive days, then you have three days to turn in the assignment once you return to school.
- Any previously assigned work will be due as usual. If you are absent the day the assignment is due, be sure to bring it with you the day you return.
- Late work is not accepted.
- Make-up is your responsibility.
- Missed laboratories will be rescheduled on the following Tuesday morning.
  TEST MAKE UP: If a test or quiz is missed due to an excused absence, you must take that test or quiz within the number of days of the absence.
- All makeup work is due two weeks prior to the semester's end.

Cheating

All C.H.S. faculty, support a strong policy against cheating. Cheating is defined as "giving or receiving, in any form, information relating to a gradable experience, either inside or outside the class." Students guilty of cheating will receive a grade of zero on the assignment or test. Also, the honor code violation will be documented and filed in the office, possibly jeopardizing any future consideration for memberships in honor clubs.

Technology Code of Ethics

According to the Fulton County schools policy "students shall not attempt to alter school or private property including technology hardware or software." This includes:

-Changing desktop settings or panels on computers.
-Removing or damaging mouse tracking balls, keyboard keys, cables, connectors, network jacks, or any other hardware.
-Modifying computer software.
-Damaging computer disks, cd-roms, or other media.

Student's name: _____

Period: _____

Please sign and date below indicating that you have reviewed the AP Physics C: Mechanics syllabus.

Student:

9/8/09

(Signature) (Date)

Parent:

9/8/09

(Signature) (Date)

Parents: Chattahoochee High School has a program called Parent Connect that allows you to view your child's academic progress and attendance over the internet. Register for Parent Connect through the front office.

The best way to get a hold of me is by email. If you have an email address that you are willing to share, please include it below.

(Parent's email)

Thank you.

Jaclyn Murray
Science
murrayj@fultonschools.org