AP Physics 1: Algebra-Based Syllabus
2020-2021

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COURSE INTRODUCTION:
AP Physics 1 is an algebra-based, introductory college-level general physics course. AP Physic 1 topics are outlined by the AP College Board and mirrors a first-semester introductory level university physics course.

AP Physics 1 is organized around six big ideas that bring together the fundamental science principles and theories of general physics. These big ideas are intended to encourage students to think about physics concepts as interconnected puzzle pieces. The solution to the puzzle is how the real world around them works. The students will participate in inquiry-based explorations of these topics to gain a more conceptual understanding of these physic concepts. Student will focus their efforts on developing critical thinking and reasoning skills.

Important Note: You are expected to take the AP Physic 1 exam on May 5th to receive the bonus points for your final average.

Course Prerequisites:
Requirements for this course include successful completion of Chemistry, Algebra II, and concurrent enrollment in Pre-calculus.

Text:
AP edition of College Physics: A Strategies Approach, 3rd Edition by Knight, Jones, and Field ©2015.

Online Resources: College Board AP Classroom (https://apstudents.collegeboard.org/), Mastering A&P (https://www.pearsonmylabandmastering.com/northamerica/masteringaandp/)

Supplemental Text: College Physics 3rd Edition Student Workbook by Knight, Jones, and Field, OpenStax College Physics for AP courses, Gregge Wolfe ©2015. The Princeton Review-Cracking the AP Physics Exam 2020 Edition, 5 steps to a 5 on the AP: McGraw Hill

Materials Lists
- Three ring binder (1.5 to 2.0 inch) with dividers for the 10 units
- One Graphical Composition Book (lab), Graphing paper, and one composition book
- Pens, Paper, Pencils, colored pencils, highlighters
- Calculator (same that is intended for math)- TI 84 CE will be a standard calculator

Instructional Strategies

The AP Physics 1 course is conducted using **inquiry-based instructional strategies** that focus on experimentation to develop students' conceptual understanding of physics principles. The students begin studying a topic by making observations and discovering patterns of natural phenomena. The next steps involve developing, testing, and applying models. Throughout the course, the students construct and use multiple representations of physical processes, solve multi-step problems, design investigations, and reflect on knowledge construction through self-assessment rubrics. In most labs, the students use either probe ware technology or simple lab equipment to obtain data. In the classroom, they use graphing calculators and digital devices for interactive simulations, Physics based exercises, collaborative activities, and formative assessments. In addition, students will Whiteboard for the purpose of collaboration, presentation, and peer review.

Laboratory Investigations and the Science Practices

The AP Physics 1 course devotes over **25% of the time** to laboratory investigations. The laboratory component of the course allows the students to demonstrate the seven **science practices** through a variety of investigations in all of the foundational principles.

The students use **guided–inquiry (GI)** or **open–inquiry (OI)** in the design of their laboratory investigations. Some labs focus on investigating a physical phenomenon without having expectations of its outcomes. In other experiments, the student has an expectation of its outcome based on concepts constructed from prior experiences. In application experiments, the students use acquired physics principles to address practical problems. Students also investigate topic-related questions that are formulated through student designed/selected procedures.

All investigations are reported in a **laboratory journal (quad ruled composition notebook)**. Students are expected to record their Observations, data, and data analyses. Data analyses include identification of the sources and effects of experimental uncertainty, calculations, results and conclusions, and suggestions for further refinement of the experiment as appropriate. **Formal lab reports** will consist of the following components:

- Title: Title of the Lab, your name, Date of experiment
- Question/Problem: What Questions or problems are you trying to solve?
- Design / Set-up/Procedures (if applicable): If the lab has no set procedures, how did you set it up? What materials did you use and how did you use them?
- Data: All data gathered in the lab will go here
- Analysis/Calculations/Graphs: Calculations are done here. Any graphs that need to be made go here.
- Conclusion: Data analysis occurs here, and a statement can be made about what was learned in the lab. Error analysis also occurs here. Evaluation of the lab occurs here as well.

Big Ideas for AP Physics

Big Idea 1 SYSTEMS: Objects and systems have properties such as mass and charge. Systems may have internal structure.
Big Idea 2 FIELDS: Fields existing in space can be used to explain interactions.

Big Idea 3 FORCE INTERACTIONS: The interactions of an object with other objects can be described by forces.
Big Idea 4 CHANGE: Interactions between systems can results in changes in those systems.
Big Idea 5 CONSERVATION: Changes that occur as a result of interactions are constrained by conservation laws.
Big Idea 6 WAVES: Waves can transfer energy and momentum from one location to another without the permanent transfer of mass and serve as a mathematical model for the description of other phenomena.

Course Units

I. Kinematics 1D (5 weeks)
- a. Vectors/scalars
- b. One dimensional motion (including graphing position, velocity, and acceleration)

II. Dynamics (7 weeks)
- a. Forces, Newton Law's
- b. Free Body diagrams

III. Circular Motion and Gravitation (2 weeks)
- a. Vector Fields
- b. Fundamental Forces
- c. Gravitational Fields

IV. Energy (7 weeks)
- a. Work
- b. Energy
- c. Conservation of energy
- d. Power

V. Momentum (4 weeks)
- a. Impulse and momentum
- b. The law of conservation of momentum

VI. Simple Harmonic Motion (3 weeks)
- a. Simple harmonic oscillators
- b. Energy of a Simple Harmonic Oscillator

VII. Torque and Rotational Motion (5 weeks)
- a. Rotational kinematics
- b. Torque and Angular acceleration and momentum
- c. Conservation of angular momentum

VIII. Electric Charge and Electric (2 weeks)
- a. Conservation of Charge
- b. Electric Charge and Electric Forces

IX. DC Circuits (3 weeks)

a. Definition of a Circuit, Resistivity
b. Ohm's Law, Kirchhoff's Loop Rule

X. Mechanical Waves and Sound (4 weeks)

a. Properties of Waves
b. Periodic Waves
c. Interference and Superposition

School-wide Grading Policy: Semester Final Average

40% of grade: Practice Work- (Digital Homework/Laboratory Notebook Checks, Daily class work, and Formative Assessments, Quizzes)
40% of grade: Summative Assessments (Major Test, Projects, and Lab Reports)
20% of grade: Final Exam

Note: Each 9-week grading period will include a minimum of the following: 9 Practice Work grades, 3 labs/quizzes, and 3 Summative Assessments. Instructions for maintaining the digital notebooks will be provided by the instructor

Tutoring: (Mon-Thur immediately after school till 4pm). Other times by appointment. Email me to request tutoring.

Practice Work: Consists of homework, class work, and quizzes. It is vey important that you complete all homework assignments. Homework assignments are given to enhance learning and promote student success.

Major Tests/Projects Expect a test at the end of each chapter and/or unit which is about every two weeks. It is very important that you take every measure possible to prepare for tests because they are a major part of your grade. When projects are assigned you are expected to put forth your very best effort.

Notebooks. You are expected to keep a neat and organized notebook. Here are the rules for keeping a neat and organized notebook.

1. Every unit will start with a tab.
2. Tape worksheets only to the front of pages.
3. The front of pages should have a heading at the top and a page number in the top right corner.

You will not regret keeping this notebook, as it will provide a safe haven for all of the materials you will need to use to prepare for assessments.

Lab Notebook: In able to receive credit for a lab-based College Physics course, many Universities will require you to present them with your AP Physics 1 Laboratory Notebook. Be sure to keep up with your lab notebook and treat it like the legal document it is.

Virtual Laboratory Procedures/ Laboratory Safety

- During Remote Learning you will be conducting virtual labs or at home labs with common items around the house.
- You must follow all laboratory safety rules when conducting a lab. Specific safety issues will be emphasized and explained at the beginning of each lab. You are required to sign a lab safety contract to verity that you have read all the safety rules before the first lab. **This is a legally binding document.**
- All lab data must be kept in your digital or paper notebook. Several labs will be conducted in groups. However, each student will complete his/her own lab report. Labs activities will also be assessed by the quizzes. All lab work will be kept in a lab notebook which is separate from your notebook. Please follow the guidelines provided to you in class.

Classroom Rules/Student Expectations/Responsibilities

1. At all times, students should be respectful of teachers and classmates.
2. Students should be on time for class. Attend google meets for classroom instruction and attendance.
3. Student are expected to be active participates in the class.
4. Students will not display cell phones, portable electronic devices, or unauthorized materials in class unless directed by a teacher to do so.
5. Students should show digital maturity while using computers/technology.
6. Students will complete their own work to successfully learn the material. Cutting and pasting from online sources is plagiarism.

Remote Learning Information

1. Student must be present each day, each period on Google Meet.
2. Attendance will be taken each day and each period.
3. Live sessions will be recorded in Google Classroom.
4. Students should follow Google meet expectations by saying hello or waving when they enter the classroom, mute your microphone and cameras on, dress appropriately that follows WHS dress code expectations.

Disciplinary Consequences:

1. 1st - Verbal acknowledgement of the infraction
2. 2nd - Parent contact (phone call and/or e-mail) – recorded on Infinite campus
3. 3rd - and all subsequent offenses – office referral
4. **Severity of infraction may warrant an immediate office referral. (Refer to the student handbook.)

Late-work/Make-up policy

1. Late will be accepted up to three school days after the due date with no penalty. Four school dates after the due date, the maximum grade that can be earned is a 75. After ten school days the missing work convers to a zero and will not be graded.
2. Unexcused absences will result in no grades awarded for the work given while absent. Excused absences allow the student to make up work in the equal amount of time they were absent.

Online Quizzes and Tests Administration

Online summative assessments with be given in Illuminate. Quizzes may be given in Illuminate or some other platform. Instructions will be provided on how to access the quizzes or tests before the date of the assessment.

Academic Integrity Policy:

- It is expected that every student will submit their own original work for every assignment (unless designed as a group project), cite outside sources, and complete assessments with assistance.
- Students should not share their username, passwords, or login information
- Woodland High School will not tolerate any acts of cheating, plagiarism, or falsification of schoolwork.
- Violation of the rules may result in a grade of zero and disciplinary referral to the appropriate Assistant Principal.

BELOW VERIFICATION OF RECEIVING PHYSICS SYLLABUS

Woodland High School
AP Physics 1 Course Syllabus

Please upload complete form in Google Classroom, email, or send to Dr. Jordan at Woodland High School

Instructor: Dr. Jacqueline Jordan
Room: 328
Year: 2020 - 2021
Course Name: AP Physics
Textbook Used: College Physic: A strategic approach. Knight et al.

By signing below the student and parent/guardians have read the syllabus and understand the course requirements and expectations outlined in the course syllabus. I will adhere by the classroom rules, laboratory policy, late work policy, and the academic integrity policy.

Use of Technology. I understand that cell phones/ear buds/ headphones and other technology should be put away during class time unless authorized use by the instructor. Violation of the use of technology during class may result in disciplinary action.
I also understand that I may contact Dr. Jordan at Woodland High School with any questions or concerns I might have about the Physics course. Phone: 770-389-2784.

Student's name _____

Student's signature: _____

Parent/Guardian's Name: _____

Parent/Guardian's Signature: _____

Home Phone: _____

Name: _____ Cell: _____ Email: _____

Name: _____Cell: _____Email: _____

Thanks, Dr. Jacqueline Jordan, Woodland High School

Academic Honesty

The work which I turn in reflects my own work and my own thoughts; if resources are used they are cited. Plagiarism is never acceptable. Even when utilizing the book and lab books quotes should be properly cited. If you are caught cheating, copying, plagiarizing or using any form of dishonesty to complete your course work. A grade of zero will be given for the work in question and parents will be contacted. **Your signature below signifies that you understand the information for Academic Honesty for Physics and agree to abide by it.**

_____

_____ _____

Student Name (Printed) **Student Signature**

Date

Tape you Syllabus to the first page in your notebook for Reference.

Return this Page to Mrs. Maddox

AP Physics Course Syllabus

Instructor: Barbara Layla Maddox

This semester will offer many opportunities for you to develop and refine your study skills. I look forward to educating, encouraging and empowering you to your greatest potential. Do not hesitate to contact me by e-mail, phone or schedule conference if you have any questions or concerns. Thank you in advance for your help and support. I look forward to a very productive semester!

By signing below the student and parent/guardians understand and will abide by the rules and regulations stated below:

Course Syllabus: The course requirements and expectations outlined in the course syllabus.

Academic Honesty: The work which I turn in reflects my own work and my own thoughts; if resources are used they are cited. Plagiarism is never acceptable. Even when utilizing the book and lab books quotes should be properly cited. If you are caught cheating, copying, plagiarizing or using any form of dishonesty to complete your course work. A grade of zero will be given for the work in question and parents will be contacted.

Technology Code: "I understand that cell phones/ ear buds/ headphones and any other personal technology must be put away during class time. The use of the technological tools and equipment provided in Physics is a privilege. I will adhere to all ethical guidelines stated in the syllabus. I understand that if I do not adhere to these guidelines that I will receive a zero on the assignment and disciplinary action may incur."

_____

_____ _____

Student's (Printed Name) **Student's Signature**

Date

_____

_____ _____

Parent's (Printed Name) **Parent's Signature**

Date

Parents, due to the lab nature of this course, it is very important that valid emergency contact numbers be given. This will be asked for on several forms that way the information is readily available. Please Print Carefully. This is the Most Important information that you give.

Daytime Contact Number _____ Name

_____

Afterschool Contact Number _____ Name

_____

Parent / Guardian's Email:

_____

_____

Academic Honesty
Receiving or giving information for an assignment is cheating and when caught in the act students will not receive credit nor receive the opportunity for a chance of make-p. Plagiarism I not acceptable: If a student takes information from the Internet or any printed resources without a citation or copies directly from a source, it is considered plagiarism and the assignment will not be accepted.

Labs and Classwork
Labs are "hands-on" and occur throughout the instructional year. You will spend at least 25% of class time in laboratory investigations. Labs are either teacher directed or student directed/open-ended.

While you will work in lab groups, each of you will submit a separate lab report to be turned in the day of your presentation. There may be exceptions as determined by Mr. Lanman. The report must include the following components:

Make-up work
Announced work, such as homework, quizzes, and major assessments are due the day the student returns. For each day's excused absence, students will have one day to make up missed work. If a student is absent under extenuating circumstances, special arrangements can be made to make up work. Please refer to the student handbook for further information about excused and unexcused absences. IT IS THE STUDENT'S RESPONSIBILITY TO CHECK THE CALENDAR AND/OR REQUEST MISSED WORK.

Grading Categories

Activities to Support Mastery (Daily) 20%
Working Toward Mastery (Formative) 25%
Assessment of Mastery (Summative) 30%
Midterm and Finals (25%)

Grading

90 -100 A
80 -89 B
70 -79 C
Below 69 F