

AP Physics 2

Dr. Anthony L. Lau
Room 225

Regular Conference Time: 10:20 to 11:15
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Tutorial Times: TBA

The 2 symbiotic objectives for this course are the following

- Learn Physics
- Earn a 3 or higher on the AP Physics 2 exam

Textbook: Knight, Jones and Field. *College Physics*. 4th Edition

This course follows the second semester of algebra-based College Physics. The following topics will be covered over the year.

- 1) Review of Forces and Energy
- 2) Thermodynamics
 - a) Heat and Thermal Energy
 - b) Entropy
 - c) Atomic Model of Temperature
 - d) Ideal Gas Laws and PV Diagrams
- 3) Electrostatics (Study of stationary charges)
 - a) Insulators vs. Conductors
 - b) Coulomb's Law
 - c) Electric Fields
 - d) Gauss's Law and Electric Flux
- 4) Electric Potential
 - a) Electric Potential Energy
 - b) Voltage
- 5) Capacitance
 - a) Charge distributions
 - b) Electric Fields and motion
- 6) Electrical circuits (Study of charges in motion)
 - a) Kirchhoff's Rules for resistance circuits with multiple voltages
 - b) RC Circuits
- 7) Electromagnetism
 - a) Magnetic Force
 - b) Types of Magnetism
 - c) Magnetic Fields using Ampere's Law
 - d) Magnetic induction and magnetic flux
 - e) Solenoids
- 8) Mechanical Waves
 - a) Wave Speed
 - b) Tension, Energy and Wave speed
 - c) Boundary Lengths and Harmonics
 - d) Interactions of Waves with Boundaries
 - e) Intensity
- 9) Wave-like properties of light
 - a) Reflection, refraction, diffraction, interference
 - b) Geometric Optics
- 10) Particle nature of light
 - a) Electromagnetic waves
 - b) Quantum Mechanical nature of light
 - c) Atomic spectra and colors
 - d) Compton Scattering
 - e) Blackbody Radiation
- 11) Atomic and Nuclear Physics
 - a) Nuclear reactions
 - b) Radioactive decays
 - c) Mass-Energy equivalence

Class Materials

- Graphing Calculator – It will be better to have your own so you know how to use advance functions on the calculator.
- AP Physics 2 Course Description from apcentral.collegeboard.com – If you want to know what is on the test and how they will test you, go over the learning objectives in this free document.
- Graph paper

Absences and Make up Work

Student attendance is critical to success in this class. **Obtaining make up work is the responsibility of the student.** Make up work should be done at home or during scheduled tutorials, not during class. Students will have missed days +1 for daily work and missed days +5 for majors (changes will be on a case-by-case basis).

Grading Policy:

Major Grades – 50% will include tests, projects, and formal labs.

1 day late – 10 points off 2 days late – 20 points off 3 days late – 30 points off

You will receive 3 major grades each nine weeks. The lowest major grade will be dropped at the end of the nine-week period. If your test grade is less than a 75, you may retest to raise your test grade up to a maximum of a 75. In order to retest, you must come in for a full tutorial session (Monday through Wednesday) and take the test afterschool on Thursday or Friday.

Daily Grades – 50% will include quizzes, current event reports, homework, labs, and class work.

Homework: Home practice will be assigned frequently. Current event reports are due every 3rd Wednesday, dates are posted on the calendar.

Late Assignments: An assignment is considered late if it is not turned before 2:50 PM for non-digital assignments. Digital assignments are due by 11:59:59 PM. Assignments will not be accepted after 3 days, a zero will be entered in the grade book.

1 day late – 15 points off 2 days late – 30 points off 3 days late – 50 points off

Classroom Expectations:

We will follow the posted ACHIEVE guidelines for classroom activities and procedures. In the classroom students are expected to be:

1. *Be Present* – success in physics requires that you attend every class.
2. *Be Prompt* – you should be in your seat and be ready to start when the bell rings.
3. *Be Prepared* – bring all necessary supplies to class every day.
4. *Be Productive* – do your best, stay focused, stay on task and participate fully.
5. *Be Polite* – respect your class-mates and teacher.