

Berthoud High School Science

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Classes I teach at Berthoud High School

AP Physics

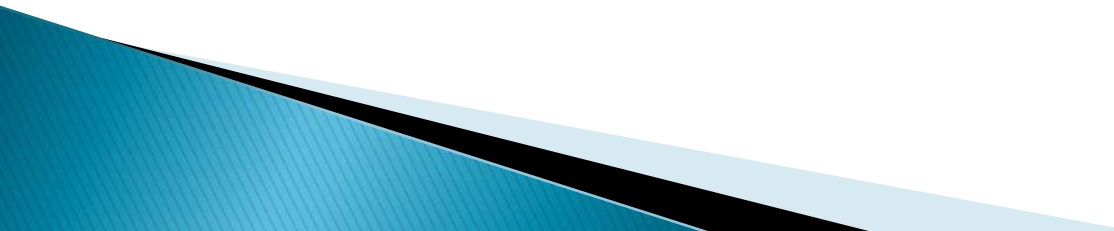
General Physics

Night Astronomy

Pre-AP Geophysical Science



AP Physics B

- ▶ –AP Physics is an upper level science class for Juniors and Seniors.
 - ▶ The curriculum is very similar to most college level freshman (trig based) physics classes.
 - ▶ First semester we meet for 90 minute classes every other day. Second semester we meet for 90 minutes every day.
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Topics Covered in AP Physics

1st Semester

Motion, Newton's Laws, Work, Energy, Momentum, Fluids, Static Equilibrium

2nd Semester

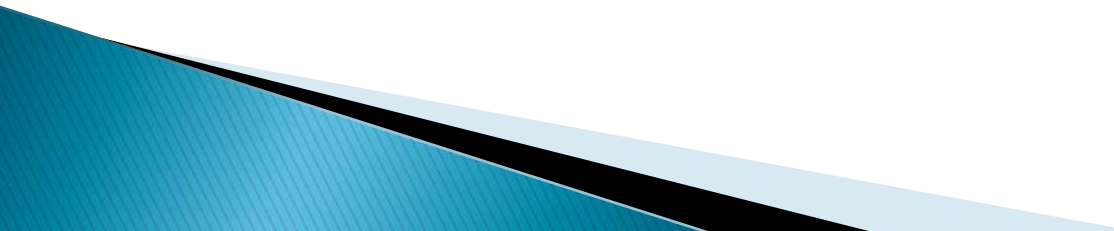
Electrostatics, Circuits, Magnetism, EM Induction, Light, Optics, Wave interference, Quantum Mechanics, Nuclear Physics, Thermodynamics.

AP Exam in May

Final Project with the Radio Telescope.



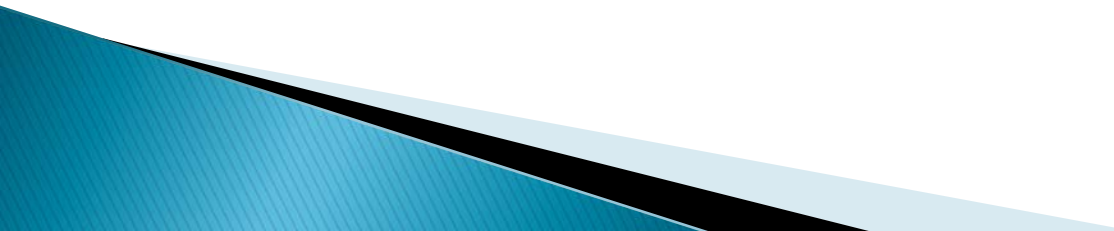
General Physics

- ▶ General Physics is for Juniors and Seniors.
 - ▶ This class covers the major themes in physics although there is more emphasis on the conceptual component and not as much rigorous mathematics.
 - ▶ In this class there are a number of big projects I do to help teach the concepts of physics.
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General Physics Projects

- ▶ 1. Use the on campus observatory to track the motion of the sun and measure the rotational velocity of earth. (unit on motion)
- ▶ 2. Use Legos, gears, and motors to make a device that can climb a vertical pole. (unit on simple machines + gear ratios)
- ▶ 3. Balsa wood glider competition (unit on fluids and Bernoulli's Principle)
- ▶ 4. Building a musical instrument (unit on waves and sound)
- ▶ 5. Assemble and solder a 20 watt stereo amplifier kit. Then build a speaker crossover with coils and capacitors. Connect this to your personal I-Pod for a sound system. (unit on electricity & magnetism)
- ▶ 6. Use a shortwave radio to receive and transmit. HAM radio License
- ▶ 7. Use the shortwave radio as a radio telescope to measure the passing of the Milky way galaxy.

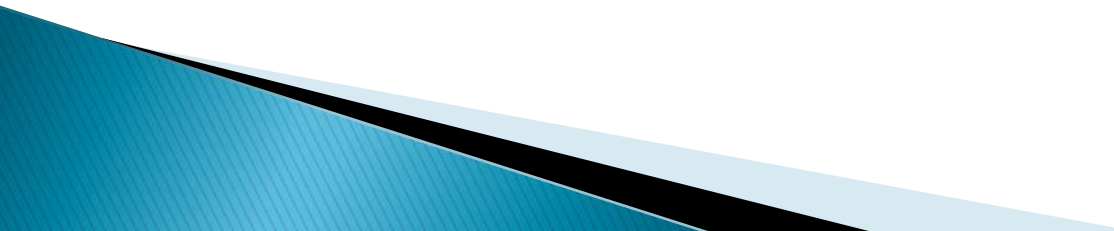
Night Astronomy

- ▶ Night Astronomy is a district magnet course for Juniors and Seniors in the Thompson School District.
 - ▶ Students come from all four high schools to meet at the Little Thompson Observatory on campus at Berthoud High School.
 - ▶ Class is every Thursday night from 6:00 to 10:00 PM.
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Little Thompson Observatory



Night Astronomy Curriculum

- ▶ Part One: How to use a telescope, identifying constellations, astrophotography, observing celestial objects.
 - ▶ Part Two: The Solar System, historical astronomy, observing the moon and planets.
- Part Three: Astrophysics, the properties of stars and galaxies.
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Pre-AP Geophysical Science

- ▶ This is a 9th grade science course for students preparing for AP science classes.
 - ▶ Three parts to this class.
- ▶ 1. Basic Physics
 - (motion, gravity, energy, electricity, optics)
- ▶ 2. Basic Chemistry
 - (periodic table, bonding, acid base, reactions)
- ▶ 3. Earth Science
 - (Plate Tectonics, Paleontology, Meteorology)