

PHYS 1111

Mechanics, Waves, & *Thermodynamics*

- Corequisite: MATH 1113***, also familiarity with college Algebra, Geometry, Trigonometry**, and Basic Chemistry
- Not available for students with credit in PHYS 1211
- Introduction to Newtonian mechanics, wave motion, and thermodynamics
- Aims of course:
 - teach you the fundamental principles/laws of physics
 - teach you how to apply these principles to practical problem solving (useful in other fields)

Physics is Science

The Scientific Method *was and is* applied in the formulation of physics

What is the Scientific Method?

1. Observation/description of natural phenomenon
2. Formulate hypothesis to explain phenomenon
3. Use hypothesis to predict other (related) phenomena
4. Perform experiment/observation to test hypothesis
5. Repeat (3) and (4) many times
6. If step (4) is all correct, then the hypothesis (2) may be regarded as a law or *theory* of nature
7. If (4) is incorrect, start over at (2)

What is Physics?

Definition: the science that deals with matter and energy in terms of motion and force

Operational definition: given some experimental observation, a theory is developed to describe it. The theory is then used to make predictions, which are then tested with further experiments or observations.

A Building-Up of Principles

Algebra -> geometry -> trigonometry-> **kinematics** -> **forces** -> **work/energy** -> **waves** -> **thermodynamics** -> ... -> electricity/magnetism -> optics -> ...