NASC 3
Physics in Everyday Life

Physics is the study of matter, energy, space and time, without which there would be nothing in existence to react or thrive or live or die. The entire universe is built upon of the principles revealed by a study of physics

" The object of all sciences is to coordinate our experiences and to bring them into a logical system."-Albert Einstein

It is the tension between creativity and skepticism that has produced the stunning and unexpected findings of science. -**Carl Sagan**

Every Science….

Chooses to study a class of phenomena

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Describe in a systematic way

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'explain' in terms of principles

Scientific Method:

Collection of Data

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Formulation of ***Laws***

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Formulation of a ***Model, Theory or Conceptual Scheme***

Laws - concise but general statements about how nature behaves
-take the form of relationship or equation

ex: Newton's Laws of Motion

$\Sigma F=ma$

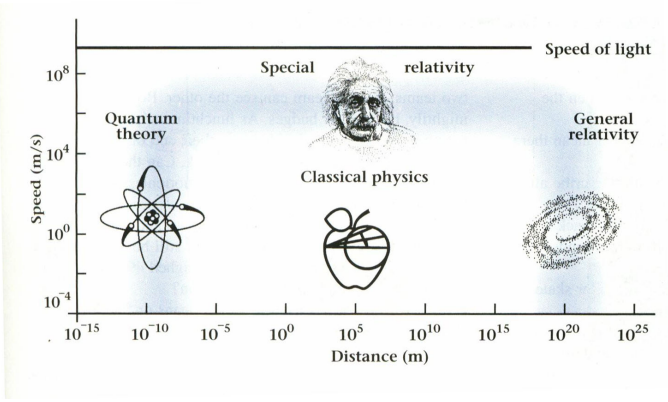
Models - mental image of a phenomena in terms of something we are familiar with
- purpose is to give a mental or visual picture

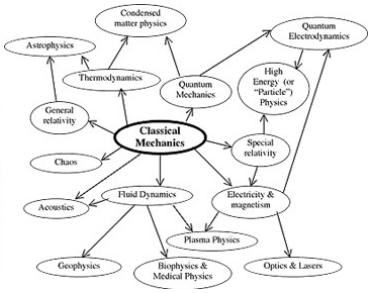
ex: Model of the Atom

Theories - attempt to solve a set of problems, often with mathematical precision
- broader, more detailed

ex: General Theory of Relativity

Electromagnetic Theory of Light





Classical Physics (< 20th century)

- **Mechanics** – deals with **motion**, inertia, force at energy.
- **Thermodynamics** – involves **heat** flow, heat transformations at **temperature** measurements
- **Electricity and Magnetism** – deals with aspects of matter at space, emphasis on **electric charge and electric current**
- **Optics** – nature and propagation of **light**

Modern Physics (≥20th century)

- **Modern Physics** – extension of physics at the atomic and macroscopic level.
  - **Relativity**
  - **Quantum Mechanics**
  - **Condensed-matter physics**
  - **Nuclear physics**
  - **Astrophysics**