**Physics 1307 Course Syllabus**

Course Description:  
  
Basic principles of physics including forces, energy, oscillations, diffusion, heat transfer and random processes, and how to apply these concepts to understand biological systems and processes. This course is intended to meet the needs of, but is not restricted to, students majoring in the life sciences.

**Topics to be Covered**

1. Math Review of basic skills required
   1. Algebra
   2. Calculus
   3. Graphing
2. Dimensional Analysis and Units
3. Estimation, Modeling and Orders of Magnitude
4. The Importance of Scaling
   1. Sizes of Mamals
   2. Metabolic Rate
   3. Motion of Animals
5. Kinematics in One Dimension (description of motion)
   1. Displacement
   2. Speed and Velocity
   3. Acceleration (Uniform and Non-Uniform)
   4. Free Fall
6. Kinematics in Two Dimensions (vectors)
   1. Circular Motion
   2. Projectile Motion
7. Dynamics (Force the cause of motion)
   1. Newton’s Laws of Motion
   2. Friction
8. Work and Kinetic Energy
9. Potential Energy and Conservative Fields
10. Systems of Particles and Momentum
    1. Center of Mass and Balance
11. Angular Momentum and Rotations
    1. Body Mechanics
12. Oscillatory Motion
    1. Body Mechanics
13. Fluids Statics
    1. Archimedes Principle
    2. Pascal’s Law
    3. Effects of Pressure
14. Fluid Dynamics
    1. Bernoulli’s Equations
    2. The Torricelli Equation
    3. Blood Flow
    4. Power Outut of HEart
15. Newton’s Law of Gravity
    1. Kepler’s Law’s
    2. Centrifuge Effects