Introduction to the Course

A. Hello and Welcome !!!

B. Scope of the Course and the Syllabus
   1. My info
   2. Fill-out INFO sheet so I can serve you better
   3. Scope of the course and the syllabus

C. Very important reminders --
   1. Enrolled in Lecture, Lab, and Recitation

Science as a Way of Knowing

1. Science is a **human activity** – it is **investigation** through cycles of **prediction** and **observation**.

2. **Creativity** is a major component of doing science, but one that is little appreciated.

3. **Technology**, especially in our methods, should be a **tool** of doing science, not an endpoint of study.

4. All of the major concepts we are learning this semester were formed as a result of original scientific research.
Principles of Biology – the Biology of Organisms

What is Life (or another way to say – what are living things?)

- **Life has order**
  hierarchy of organization—in form, function, time, and space

- **Life (or living systems) has emergent properties**
  properties that “emerge” or exist at given levels of biological organization

- **Reproduction** – organisms reproduce themselves (biogenesis)

- **Growth & Development** – heritable programs in organisms direct changes during one’s lifespan.

- **Energy utilization** – organisms take in and transform energy to do work.

- **Response to Environment** – organisms detect and respond to stimuli in the external environment (or internal!)

- **Homeostasis** (regulation of internal environment of an organism) – water, solute molecules, gases, heat, etc…

- **Evolutionary Adaptation** – organisms evolve as a result of interactions with the abiotic and biotic world.

Some major themes of Life

1. The cell is the lowest level of biological organization that is capable of performing all the activities of life

2. The continuity of life (its order) is based on heritable information systems.

3. Form and function are inseparably intertwined.

4. Organisms are open systems that interact continually with their environments.

5. Regulatory mechanisms are key to action and maintenance.

6. Unity and diversity of life are evident everywhere.

Evolution is the Core theme of Biology

1. “Nothing makes sense except in the light of evolution”