

## Syllabus for CIS courses

### SB-111 Introductory Biology (3 Credits): 1<sup>st</sup> Semester Course

**Energy, enzymes and metabolism:** Start with Thermodynamics and move to ATP in biochemical energetics; Enzymes and how they work, introduction to respiration and photosynthesis (8 hrs)

Cell cycle (basic regulation and introduction to apoptosis and cancer) (2 hrs);

**Inheritance biology:** Cell Cycle, Mitosis and Meiosis (3hr); Mendelian genetics (2 hrs)

**Plant responses to environmental challenges** (4 hrs)

**Animal physiology,** homeostasis and temperature regulation; endocrine system and defense systems (6 hrs)

**Amino acids:** chemical structures and classification, peptide bond, uncommon amino acids and their roles, titration curves of amino acids, isoelectric point, oligo peptides (3 hrs)

**Carbohydrates:** monosaccharides, disaccharides, aldoses and ketoses, chiral properties and structural representations, reducing sugars, glycosidic bonds, phosphodiester bonds (3 hrs)

**Nucleotides:** purines and pyrimidines, nucleosides and nucleotides chemical and physical properties, Chargaff rules (2 hrs)

**Lipids:** storage lipids, triacyl glycerols, fatty acids and their properties and nomenclature (3 hrs)

Total hours: 36

- a) Life: The Science of Biology by Sadava et al
- b) Biology by Raven and Johnson
- c) Campbells Introduction to biology