

# 1 Modern Science in Other Introductory Science Courses

Several people asked about the extent to which other science departments have updated their introductory courses. Here is an overview of first year chemistry and biology:

## Chemistry 142: General Chemistry

- 1 wk: Components of matter
- 2.5 wks: Stoichiometry, types of reactions
- 1.5 wk: Gases & kinetic theory
- 1.5 wk: Chemical equilibrium
- 2 wks: Acids and bases
- 1 wk: Aqueous equilibria

## Chemistry 152: General Chemistry

- 4 wks: Thermodynamics
- 1.5 wk: Cell potentials, electrochemistry
- 2.5 wks: Quantum mechanics and atomic theory
- 2 wks: Bonding

## Chemistry 162: General Chemistry

- 2 wks: Orbitals and bonding, spectroscopy
- 2 wks: Chemical kinetics, reactions
- 1 wk: Liquids and solids: structure and intermolecular forces
- 1 wk: Phase diagrams, phase transitions
- 1 wk: Properties of solutions
- 1 wk: Transition metals and complexes
- 1 wk: Organic compounds

## Biology 180: Introductory Biology

- 2 wks: Evidence for evolution
- 2 wks: Genetics, inheritance, mutations, gene flow, sexual selection
- 1 wk: Speciation, bacteria and archaea
- 1 wk: Viruses, protists, plants
- 1 wk: Fungi, animals
- 1 wk: Human evolution, biodiversity
- 2 wks: Population ecology, competition, community structure
- 1 wk: Ecosystem ecology

## Biology 200: Introductory Biology: Molecular, Cellular and Developmental

- 1 wk: Cells, organelles, biological molecules
- 1 wk: Proteins, catalysis, enzymes
- 1 wk: Lipids, membranes, respiration, Krebs cycle
- 2 wks: Genetic code, transcription, translation, gene regulation
- 1 wk: Cell cycle, cancer, meiosis, cell signaling
- 2 wks: Fertilization, embryo development
- 1 wk: Alleles, immunity, molecular techniques
- 1 wk: Pedigree analysis, linkage analysis, cell biology of disease

## Biology 220: Introductory Biology

- half qtr: Animal anatomy and physiology
- half qtr: Plant anatomy and physiology

Obviously, the first two quarters of biology heavily reflect advances in the last 50 years, while chemistry is spending about as much time on basic quantum as we do, plus four more weeks of applied quantum (bonding), plus half a quarter on thermodynamics.