

Goals of Chem 311

1. Understand how a microscopic system is governed in quantum mechanics by the Schrodinger equation. Understand the physical and mathematic means of solutions for simply systems such as particle in box, harmonic oscillator, and single electron atom.
2. Understand important quantum mechanical phenomena, such as uncertainty principle, zero-point energy, and tunneling, etc.
3. Understand the meaning of the wavefunction as the probability amplitude and its role in representing the state of a microscopic system.
4. Understand approximate descriptions of atomic and molecular structures, particularly the molecular orbital theory for chemical bonds.
5. Understand molecular symmetry and it applications.
6. Understand spectroscopy, which resulted from the interaction between photons and molecules, for molecular rotation, vibration, and electronic excitations.