This course is designed to introduce students to a thorough, research-oriented view of Physical Chemistry. This content builds on the introduction to quantum mechanics where Students will solve the Schrödinger equation in 1-, 2-, and 3-dimensions for several problems of interest in chemistry, including the particle-in-a-box, harmonic oscillator, rigid rotor, and hydrogen atom. Further topics include atomic structure, valence-bond and molecular orbital theories of chemical bonding and group theory. The concepts of quantum theory are applied to molecular spectroscopy and nuclear magnetic resonance.