Sacramento City College  
CHEM 309: General, Organic and Biochemistry  
Prof. Dianne Bennett  
Agenda (Fall) • Agenda (Spring) • Homework Problems

1. Chapter 2: The Classical Wave Equation
2. 2.1: The One-Dimensional Wave Equation
3. 2.2: The Method of Separation of Variables
4. 2.3: Oscillatory Solutions to Differential Equations
5. 2.4: The General Solution is a Superposition of Normal Modes
6. 2.5: A Vibrating Membrane
7. 2.E: The Classical Wave Equation (Exercises)

• Homework Solutions
1. Chapter 11: Computational Quantum Chemistry
2. 11.1: Gaussian Basis Sets
3. 11.2: Extended Basis Sets
4. 11.3: Orbital Polarization Terms in Basis Sets
5. 11.4: The Ground-State Energy of H2H2
6. 11.5: Quantum Calculations
7. 11.E: Computational Quantum Chemistry (Exercises)

Chapters
1. Chapter 12: Group Theory: The Exploitation of Symmetry
2. 12.1: The Exploitation of Symmetry
3. 12.2: Symmetry Elements
4. 12.3: Symmetry Operations Define Groups
5. 12.4: Symmetry Operations as Matrices
6. 12.5: The C3VC3V Point Group
7. 12.6: Character Tables
8. 12.7: Characters of Irreducible Representations
9. 12.8: Using Symmetry to Solve Secular Determinants
10. 12.9: Generating Operators
11. 12.E: Group Theory: The Exploitation of Symmetry (Exercises)

• Video Tutorials
1. Chapter 13: Molecular Spectroscopy
2. 13.1: The Electromagnetic Spectrum
3. 13.2: Rotations Accompany Vibrational Transitions
4. 13.3: Unequal Spacings in Vibration-Rotation Spectra
5. 13.4: Unequal Spacings in Pure Rotational Spectra
6. 13.5: Vibrational Overtones
7. 13.6: Electronic Spectra Contain Electronic, Vibrational, and Rotational Information
8. 13.7: The Franck-Condon Principle
9. 13.8: Rotational Spectra of Polyatomic Molecules
10. 13.9: Normal Modes in Polyatomic Molecules
11. 13.10: Irreducible Representation of Point Groups
12. 13.11: Time-Dependent Perturbation Theory
13. 13.12: The Selection Rule for the Rigid Rotator
14. 13.13: The Harmonic Oscillator Selection Rule
15. 13.14: Group Theory Determines Infrared Activity
16. 13.E: Molecular Spectroscopy (Exercises)

• Basic Knowledge Practice Quizzes

This course is an intensive survey of general, organic, and biological chemistry specifically designed for nursing majors and other health related fields. Topics include general chemistry, organic chemistry, and biological chemistry as applied to the chemistry of the human body.
Homework

• Homework Solutions