Following is a brief outline of the sequence of material to be considered CHEM 1474, General Chemistry II. The chapter and section references correlate with the course textbook, Chemistry: The Central Science, Brown, LeMay, and Bursten, and Murphy, 11th Edition.

I. Intermolecular Forces, Liquids, and Solids (Chapter 11)
   A. Very brief review of Lewis structures and molecular geometry [8.5 – 8.7, 9.1 - 9.3, handout]
   B. The kinetic-molecular description of gases, liquids and solids [10.7, 11.1]
   C. Intermolecular forces and their effect on properties [11.2]
   D. Properties of Liquids and Solids [11.3 - 11.8]

II. Properties of Solutions (Chapter 13)
   A. The solution process - review of electrolytes [13.1, handout]
   B. Factors affecting solubility [13.2 – 13.3]
   C. Methods of expressing concentration [13.4]
   D. Colligative properties [13.5]
   F. Colloids [13.6]

III. Chemical Kinetics (Chapter 14)
   A. Methods of expressing rates [14.2]
   B. Factors that affect reaction rates [14.1]
      i. Dependence of rate on concentration [14.3 - 14.4]
      ii. Dependence on temperature [14.5]
      iii. Catalysts [14.7]
   C. Mechanisms and molecularity [14.6]

IV. Chemical Equilibrium (Chapter 15)
   A. The concept of equilibrium [15.1]
   B. The equilibrium constant [15.2]
   C. Interpreting and working with equilibrium constants [15.3]
   D. Heterogeneous equilibria [15.4]
   E. Calculations involving equilibrium [15.5 -15.6]
   F. LeChâtelier's Principle [15.7]
V. Acid-Base Equilibria (Chapter 16)
   A. Review of your current acid-base concepts [16.1]
   B. Bronsted-Lowry Acids and Bases [16.2]
   C. The dissociation of water [16.3]
   D. The pH scale [16.4]
   E. Calculations involving strong acids and bases [16.5]
   F. Calculations involving weak acids, weak bases, and salts [16.6 – 16.9]
   G. Acid-base behavior and chemical structure [16.10]
   H. Lewis acids and bases [16.11]

VI. Other Aspects of Aqueous Equilibria (Chapter 17)
   A. Common ion effect [17.1]
   B. Buffered solutions [17.2]
   C. Acid-base titrations [17.3]
   D. Solubility equilibria [17.4 – 17.5]
   E. Qualitative analysis for metallic elements [17.6 – 17.7]

VII. Thermodynamics (Chapters 19)
   A. The nature of energy and its importance in chemistry [5.1]
   B. The First Law of Thermodynamics [5.2]
   C. Chemical applications of enthalpy [5.3 – 5.4]
   D. Enthalpies of formation [5.7]
   E. Spontaneous processes [19.1]
   F. Entropy [19.2, 19.4]
   G. Free energy and its application to spontaneity [19.5]

VIII. Electrochemistry (Chapter 20)
   A. Oxidation-reduction reactions [20.1 – 20.2]
   B. Voltaic cells [20.3]
   C. Cell EMF [20.4, 20.6]
   E. Free energy and redox reactions [20.5]
   F. Batteries and fuel cells [20.7]
   G. Corrosion [20.8]
   H. Electrolysis [20.9]

IX. Nuclear Chemistry (Chapter 21) (Time permitting)
   A. Radioactivity [21.1]
   B. Patterns of nuclear stability [21.2]
   C. Nuclear transmutations [21.3]
   D. Energy changes in nuclear reactions [21.6]
   E. Nuclear fission [21.7]
   F. Nuclear fusion [21.8]
   G. Biological effects of radiation [21.9]