The topics below have been covered in recent Chemistry 102 courses at the University of Illinois. They may appear on the Chemistry Proficiency Exams for Chemistry 102.

Atomic Structure
Electromagnetic Radiation
Bohr Model of the atom
Quantum Mechanical Model of the atom
Chemical bonds
Lewis Structures, octet rule and exceptions, resonance and formal charge
VSEPR model
Lewis structures of organic molecules
Hybridization model
Intermolecular Forces and Physical Properties
Stoichiometry
Electrolytes and Precipitation reactions
Gases Laws and properties of ideal and non-ideal gases
Bond Energy
Lattice Energy
Chemical Equilibrium
Solubility Equilibria
Acid-Base Reactions
Thermodynamics
Redox Reactions
Electrochemistry