The following chapters/sessions refer to "General Chemistry" by Darrell Ebbing and Steven D. Gammon. The 9th, 10th, and 11th editions all have the same chapter/section numbers and titles. In each chapter, the authors organize the sections in a few parts and nicely give a subtitle for each part (the subtitles are included after the section numbers for your reference). The topics in blue are the ones proposed in Dr. Lavelle's syllabus, and they are merged into Dr. Ruiz-Silva's syllabus. As the Committee strongly recommended, "Appendix A Mathematical Skills" is added at the beginning.

Week	Chapter	Sections and Topics
Week #1 (perhaps "mathematical skills" can be covered in TA discussions?)	Appendix A Mathematical Skills	A.1 Scientific (exponential) notation A.2 Logarithms A.3 Algebraic operations and graphing
	Ch. 1 Chemistry and Measurement	Sec. 1.1-1.4 An introduction to chemistry Sec. 1.5-1.8 Physical measurements SI units; dimensional analysis; significant figures.
	Ch. 2 Atoms, Molecules, and Ions	Sec. 2.1-2.5 Atomic theory and atomic structure atoms (protons, neutrons, electrons, isotopes); atomic number; atomic weight. Sec. 2.6-2.8 Chemical substances: formulas and names Sec. 2.9-2.10 Chemical reactions: equations conservation of matter; balancing non-redox chemical reactions.
Week #2	Ch. 3 Calculations with Chemical Formulas and Equations	Sec. 3.1-3.2 Mass and moles of substance molar mass. Sec. 3.3-3.5 Determining chemical formulas determining molecular formulas. Sec. 3.6-3.8 Stoichiometry: quantitative relations in chemical reactions limiting reactant calculations.
Week #3	Ch. 4 Chemical Reactions	Sec. 4.1-4.2 Ions in aqueous solution solutions and solvation. Sec. 4.3-4.6 Types of chemical reactions (precipitation, acid-base, and redox) oxidation number and state; balancing redox reactions. Sec. 4.7-4.8 Working with solutions molarity calculations Sec. 4.9-4.10 Quantitative analysis (gravimetric analysis and volumetric analysis)
Week #4 and Week #5	Ch. 5 The Gaseous State	Sec. 5.1-5.5 Gas laws ideal gas law (PV = nRT). Sec. 5.6-5.8 Kinetic-molecular theory
	Ch. 6 Thermochemistry	Sec. 6.1-6.6 Understanding heats of reactions conservation of energy; internal energy; heat and work as forms of energy; heat of reaction (exothermic & endothermic); enthalpy is a state function and its relation to heat of reaction at constant pressure; concept of a thermodynamic system; calculating pV work. Sec. 6.7-6.9 Using heats of reaction

		Hess's law; using standard enthalpies of known reactions or bond enthalpies or standard enthalpies of formation to calculate an unknown reaction enthalpy (please note that "bond enthalpy" is also discussed in sec. 9.11 "bond energy").
Week #6	Ch. 7 Quantum Theory of the Atoms	Sec. 7.1-7.3 Light waves, photons, and the Bohr Theory properties of light & electrons with calculations involving $c = \lambda\nu$ and $E = h\nu$. Sec. 7.4-7.5 Quantum mechanics and quantum numbers s-, p-, and d- orbitals; shells.
	Ch. 8 Electron Configuration and Periodicity	Sec. 8.1-8.4 Electron structure of atoms electron configurations; core and valence electrons. Sec. 8.5-8.7 Periodicity of the elements trends in the periodic table.
Week #7	Ch. 9 Ionic and Covalent Bonding	Sec. 9.1-9.3 Ionic bonds ionic bonds. Sec. 9.4-9.11 Covalent bonds covalent bonds; Lewis structures; duet and octet rules of electrons; resonance structures; formal charge; electronegativity; bond lengths & strengths.
Week #8	Ch. 10 Molecular Geometry and Chemical Bonding Theory	Sec. 10.1-10.4 Molecular geometry and directional bonding dipole moments; molecular shape; hybridization (sp, sp^2, sp^3); torsional rigidity (or lack) of bond types. Sec. 10.5-10.7 Molecular orbital theory
Week #9 (perhaps instructors can select the topics or shorten the contents?)	Ch. 11 State of Matter; Liquids and Solids	Sec. 11.1 Comparison of gases, liquids, and solids Sec. 11.2-11.3 Changes of state Sec. 11.4-11.5 Liquid state Sec. 11.6-11.10 Solid state
	Ch. 12 Solutions	Sec. 12.1-12.3 Solution formation solutions and solvation (more in-depth than 4.1-4.2). Sec. 12.4-12.8 Colligative properties ideal solution. Sec. 12.9 Colloid formation
Week #10 (perhaps instructors can select the topics or shorten the contents?)	Ch. 15 Acids and Bases Ch. 16 Acid-Base Equilibria	Properties & structures of inorganic & organic acids/bases; Bronsted & Lewis acids/bases; conjugate acids/bases; acidity/basicity constants and pK_a/pK_b; calculating pH and pOH of aqueous solutions containing strong or weak acids/bases. (Please note: these topics are discussed in details in Ch. 15 and Ch. 16; they are also briefly, qualitatively introduced in Sec. 4.4) Calculating equilibrium constants & equilibrium concentrations for liquid phase reactions (use acids and bases as examples for aqueous/liquid phase reactions); law of mass action.

Topics not covered in the above Ch. 1-12, 15, and 16:

Reactions at equilibrium; calculating equilibrium constants & equilibrium concentrations for gaseous phase reactions (use ideal gas law for gas phase reactions). These topics are discussed in Ch. 14.

Definition of entropy as a state function; calculate changes in work, heat, enthalpy, energy, and entropy; calculate entropy changes of chemical reactions; calculate Gibbs free energy of a reaction knowing, the enthalpy and entropy change of a reaction, or the equilibrium constant; reaction spontaneity (if time mention 1^{st}, 2^{nd}, and 3^{rd} laws of thermodynamics); using redox reactions to calculate thermodynamic changes. These topics are discussed in Ch. 18 and Ch. 19.

Rate of a reaction; reaction order; 0^{th}, 1^{st}, and 2^{nd} order rate laws to calculate concentrations and rate constants (if time discuss half-life). These topics are discussed in Ch. 13.