**CHMG-141**

**General and Analytical Chemistry I**

**Exam 3 Guide**

(Ch. 6, 7, and 8; Lectures 21-25)

**Chapter 6: OxRed Reactions (Recall)**

Oxidation numbers

Oxidation-Reduction Reactions (be able to identify RedOx reactions, Half reactions, oxidizing and reducing agents)

Balancing Redox Reactions by the Half-Reaction Method

**Chapter 7: Thermochemistry**

Chemical energetics

System and surroundings

Potential energy and kinetic energy

Law of conservation of energy

Internal Energy and State Functions

Expansion Work

Internal Energy and Enthalpy

Heat and temperature

Heat capacity

Specific heat capacity

Heat transfer

Exothermic/endothermic changes

Energy and Changes of State

Measuring Heats of Reactions

Using calorimetry to measure heats of reactions at constant pressure

Enthalpy as a state function

Thermochemical Equations

Hess’ law

Hess’s Law & Energy Level Diagrams

Standard Conditions in Thermochemistry

Standard enthalpies of

Formation

Combustion

Solution

Reaction

|  |
| --- |
|  |
| Breaking bonds requires energy  Bond Dissociation Energies |
| Fossil Fuels, Fuel Efficiency, and Heats of Combustion |
| An Introduction to Entropy |
| An Introduction to Free Energy |

**Chapter 8: Gases**

Kinetic molecular theory of gases

Properties of gases

Pressure: result of molecular collisions

Pressure units

Gas laws

Charles’ Law

Boyle’s Law

Avogadro’s Law

Ideal gas law

Combined Law

Dalton’s law of partial pressures

Molar volume, Density, and Molar Mass of a Gas

Gases in chemical reactions; stoichiometry

Solids, Liquids, and Gases: a molecular comparison.

* Main properties of Solids, Liquids, and Gases
* What factors cause changes between the solid and liquid phase? The liquid and gas phase?

Examine the Heating curve for water

Exothermic and endothermic processes

Calculations using the heat of vaporization, heat of fusion and specific heat capacity in calculations