**101 Chem.**

**1 –Stoichiometry (6 Lectures)**

**Chp.1- Introduction: Matter and Measurements**

Unites of measurements

**Chp. 3- Stoichiometry: Calculation with Chemical Formulas and Equations**

Chemical Equations

Formula Weights

Avogadro's Number and the Mole

Empirical Formulas from Analyses

Quantitative Information from Balance Equations

Limiting Reactants

**Chp.13- Properties of Solutions**

Ways of Expressing Concentration

**2-Gases ( 5 lectures)**

**Chp.10- Gases**

Characteristics of Gases

Pressure

The Gas Law

The Ideal-Gas Equation

Further Applications of the Ideal-Gas Equation

Gas Mixtures and Partial Pressures

Kinetic-Molecular Theory

Molecular Effusion and Diffusion

Real Gases: Deviations from Ideal Behavior

**3-Thermochemistry (6 Lectures)**

**Chp.5-Thermochemistry**

The Nature of Energy

The First Law of Thermodynamics

Enthalpy

Enthalpies of Reaction

Hess's Law

Enthalpies of Formation

**4- Chemical Kinetics**  **(4 Lectures)**

**Chp.14 Chemical Kinetics**

Factors that Affect Reaction Rates

Reaction Rates

The Rate Law: The Effect of Concentration on Rate

The Change of Concentration with Time

Temperature and Rate

Catalysis

**5- Solutions**  **(4 Lectures)**

**Chp.13 Properties of Solutions**

Saturated Solutions and Solubility , Factors affecting Solubility, Colligative Properties

**6- Chemical Equilibrium (5 Lectures)**

**Chp.15 Chemical Equilibrium**

The concept of Equilibrium

The Equilibrium Constant

Interpreting & working with Equilibrium Constants

Heterogeneous Equilibria

Calculating Equilibrium Constants

Applications of Equilibrium Constants

Le Chatelier's Principle

**7- Ionic Equilibrium (5 Lectures)**

**Chp.16 Acid-Base Equilibria**

Acids and Bases: A Brief Review

Bronsted-Lowry Acids and Bases

The Autoionization of Water

The pH Scale

Strong Acids and Bases

Weak Acids

Weak Bases

Relationship Between Ka and Kb

Lewis Acids and Bases