Chemical equilibrium

- Law of mass action
- Graphs representing systems in equilibrium
- Homogeneous equilibrium
- Heterogeneous equilibrium
- Dynamic equilibrium
- How to write equilibrium concentration expressions for heterogeneous equilibrium
- What does the magnitude of Kc or Keq tell you
- Equilibrium constant for reactions with 2 or more elementary steps
- Multiplying an equation by a coefficient 'n' changes Kc to Kc raised to n
- When Kc = 1 what does it mean?
- Application of Le Chateliers principle on systems in equilibrium
- Shift in equilibrium when there is a [concentration] change
- Shift in equilibrium when concentration is changed by changing volume
- Shift in equilibrium when an inert gas is added to the reaction mixture
- Shift in equilibrium when products are removed from the closed equilibrium system
- Shift in equilibrium when the number of moles of reactants and products are not equal for gaseous system
- Shift in equilibrium when heat is added or removed in an exothermic or endothermic reaction
- Shift in equilibrium and catalyst for a reversible reaction
- Problems – When the equilibrium expression is a perfect square
- Problems – When K is very very small (applying 100th rule)
- Problems – When the equilibrium expression is not a perfect square and the use of quadratic equation
- Problems – When a stress is applied to a system in equilibrium (Le Chatliers principle) new concentration of reactant or product
- Entropy – definition and prediction based on state of matter, temperature of reactants and products, # of moles of reactants and products
- Spontaneous reactions
- Gibbs Helmoltz equation and free energy
- What is the significance of free energy?
- What are the conditions for spontaneity of chemical reactions
- Calculation of Kc from free energy $\Delta G = -2.303\ RT\log Kc$, $\Delta G = DH - T\Delta S$

- Temperature at which a system attains equilibrium
- ΔG and equilibrium when value = 0
- ΔG and equilibrium when value < 0 = -ve
- ΔG and equilibrium when value > 0 = +ve