

CHM225 Syllabus – first term, 2007
Thermodynamics

First Law: state functions, work, heat, thermodynamic paths, reversible and irreversible processes, calculations of work and heat for various processes, exact and inexact differentials, Carnot cycles, heat engines, efficiency.

Second law: Clausius and Kelvin statements of Second Law, introduction of entropy as state function, calculation of entropy changes, perpetual motion machines of second kind, statistical interpretation of entropy, conditions for spontaneity, Maxwell relations.

Gibbs free energy, chemical potential, phase equilibrium conditions, Clapeyron equation, Clausius-Clapeyron equation, multi-component systems, Gibbs-Duhem equation, chemical equilibrium, spontaneity and chemical reactions.

Solutions, Henry's and Raoult's laws, ideal and ideally dilute solutions, liquid-vapor equilibrium, phase diagrams and phase rule, colligative properties, multi-component phase equilibria.