

Department of Pharmaceutics

Title of the course: *Physical Pharmacy II* Course number: **228**

Level: 2nd Class, 2nd Semester

Credit hours/week : **Theory 3 Laboratory 1**

Reference text: *Physical Pharmacy by Alfred Martin et al.*

Objectives: To understand the application of quantitative and theoretical principles of the physical characters of matter in the practice of pharmacy. It aids the pharmacists in their attempt to predict the solubility, compatibility and biological activity of drug products. As a result of this knowledge it will help in the development of new drugs and dosage forms as well as in improvement of various modes of administration.

Lecture title
Solubility and distribution phenomena, solvent-solute interactions, solubility of gases in liquids, solubility of liquids in liquids, solubility of non-ionic solids in liquids, distribution of solutes between immiscible solvents.
Complexation, classification of complexes, methods of analysis, thermodynamic treatment of stability constants.
Kinetics, rate and orders of reactions, influence of temperature and other factors on reactions rate, decomposition of medicinal agents and accelerated stability analysis.
Interfacial phenomena, liquid interfaces, surface free energy, measurement of interfacial tension, spreading coefficient, surface active agents and wetting phenomena.
Colloids, dispersed system and its pharmaceutical application, types of colloidal systems, kinetic properties, diffusion, zeta potential, solubilization.
Micrometrics, particle size, methods of determining particle size, particle shape and surface area, porosity, density.
Rheology, Newtonian systems, thixotropy measurement, negative thixotropy, determination of thixotropy.
Polymer science, definitions pharmaceutical applications, molecular weight averages.