**Syllabus**

**BPH 411 Medicinal Chemistry** -**III 3 credits**

(Pre-requisite-Medicinal Chemistry-I & II)

**1. Combinatorial chemistry:**

a) Combinatorial synthesis: Introduction to drug discovery process, b) library synthesis on resin beads- solid phase chemistry, resin beads, speeding up of peptide synthesis, mix and split library synthesis, c) solution phase, indexed combinatorial libraries, template-based libraries, liquid phase combinatorial synthesis, d) encoded combinatorial synthesis- encoded requirements, examples of tagged libraries, e) solid phase library, chemistry of linkers, carboxylic acid linkers, carboxamide linkers, alcohol linkers, amine linkers, traceless linkers, light-cleavable linkers, selected solid phase chemistry, f) analysis of products with different analytical techniques g) combinatorial chemistry: applications and impact on drug discovery.

**2. Knowledge of the chemistry (including synthesis), structure activity relationships and physicochemical properties of the following groups of medicinal substances:**

a. Proton pump inhibitors

b. Tranquilizing agents

c. Anti-asthmatic agents

d. Antitubercular agents

e. Anti-diarrheal agents

f. Anti-malarial agents

g. Anti-cancer agents

h. Membrane acting drugs: Drugs acting on Ca++, K+, Na+ channels

i. Antithyroid drugs

h. Oral contraceptives and steroidal hormones, hormone replacement therapy

3. **Natural products and secondary metabolites as drugs:**

a) **Vitamins:** The clinical aspects of the vitamins and their effects on free radicals,synthesis of the vitamins such as vit-B1, vit-C, nicotinamide, pyridoxine,mechanism of action of vitamins.

b) **Alkaloids:** Alkaloids as pharmaceutical raw materials, opium and analogues of opium, synthesis of papaverine and ephedrine,clinical comparison of ephedrine and epinephrine.

c) **Glycosides:** Chemical and clinical aspects of digoxin and other digitalis glycosides.