<u>Curriculum Plan</u> (Even Semester, January-May 2021)

Teacher Name: **Dr. Renu Bala**
Course: **B.Sc. (H) Chemistry, II year, Sem IV**
Paper Name: **Pharmaceutical Chemistry (SEC)**
UPC: **32173909**

Contents	Allocation of Lectures	Month wise schedule to be followed	Assignments/ Presentations/ Preparation in Lab etc

UNIT-1(INTRODUCTION)
I. Drug Discovery: History of Drug & It's process, drug target, Drug discovery cycle.
• Drug discovery methods
  o Random screening
  o Molecular manipulation
  o Molecular designing
  o Drug metabolites
  o Serendipity
II. Design and Development:
• Target selection
• Lead discovery, Lead compounds & It's optimisation
• Synthesis
• Medicinal chemistry
• In Vitro studies
• In Vivo studies
• Clinical trials and Therapeutics
• Assay development SAR
  o Measuring the activity of drug
  o And evaluation
  ▪ Enzyme/Substrate interaction
  ▪ Protein targets
• Screening & Design
• Phases of drug development
• Drug discovery and development-timeline
III. Sources of Drug:
• Biological
• Marine
• Minerals
• Plant Issue culture
• Physio-Chemical aspects
  o Solubility
  o Partition coefficient
  o Acid-Base properties
  o Hydrophobic interactions
  o Hydrogen bonding
  o Charge transfer
  o Dipole-Dipole interaction
	Hands on Exercise: 60 lectures	1st week of January- 2nd week of February	Syllabus Overview
			Class lecture
			Class discussion
			Presentations
			Quizzes
			Assignments

o Ionic bonds o Covalent bonds o Chelation o Surface chemistry • Stereo-Chemical aspects o Optical o Geometric o Bioisosterism • Drug Receptor interaction IV. Basic Retrosynthetic Approach for development of Drug: • Technique for solving problems in the planning of organic molecule/synthesis. V. Cause of side-effects of Drug: • Anti-inflammatory agent-ibuprofen • Anti-histamine agent-cetirizine • Immunomodulatory agent-thalidomide • Difference b/w Drug and poison			
UNIT-2 I. Drugs and Pharmaceutical • Study of Pharmaceutical aids o Talc o Diatomite o Kaolin o Bentomite o Gelatin o Natural colours II. Synthesis, Structure Activity Relationship & Different types of the representative drugs of the following classes with uses and abuses: • Analgesics agents- aspirin • Antipyretic agents-paracetamol • Anti-inflammatory agent • Antibacterial and antifungal agents-sulphonamides, sulphanethoxazol, sulphacetamide, trimethoprim • Antiviral agent- acyclovir • Central nervous system agents – phenobarbital, diazepam • Cardiovascular- glyceryl trinitrate • Antilaprosy agents – dapsone • HIV-AIDS related drugs – AZT-zidovudine		3rd week of February –3rd week of March	Class lecture Assignments allotment Presentations Discussions
UNIT-3 I. Fermentation • Aerobic and anaerobic fermentation II. Production of ethyl acetate, citric acid, III. Antibiotics • Penicillin • Cephalosporin		1st week of April-3rd week of April	Class lecture Presentation and discussion

• Chloromycetin • Streptomycin IV. Amino acids • Lysine • Glutamic acid V. Vitamins • Vitamin B2 • Vitamin B12 • Vitamin C			
		Last week of April	Class test Previous year question paper and discussion