PANIPAT INSTITUTE OF ENGINEERING AND TECHNOLOGY, PANIPAT

DEPARTMENT OF PHARMACY

Course: B. Pharmacy

LESSON PLAN

Faculty Name: Dr. Daisy Arora **Class: B. Pharmacy- 5th semester**

Subject: Formulative Pharmacy **Subject Code: BP 502T**

Scope: Course enables the student to understand and appreciate the influence of pharmaceutical additives and various pharmaceutical dosage forms on the performance of the drug product.

Aim and Objective:

- Know the various pharmaceutical dosage forms and their manufacturing techniques.
- Know various considerations in development of pharmaceutical dosage forms
- Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality
- To understand the various phases in development of pharmaceutical products and the quantization of various physicochemical properties of a drug moiety that will assist in developing a stable, safe and effective formulation with maximum bioavailability.

Course outcome: At completion of this course it is expected that students will be able to –

- Understand the principle involved in formulation of various pharmaceutical dosage forms.
- Prepare various pharmaceutical formulations.
- Perform evaluation of pharmaceutical dosage forms like capsules, tablets, parenterals etc

Number of Lectures: 45 **Each lecture: 01 hour (3 lectures per week)**

Chapter	Lecture No.	Particular	Remark/Date
Unit 1: Preformulation Studies (7 hrs)	1.	Introduction to preformulation, goals and objectives,	
	2.	Study of physicochemical characteristics of drug substances. a. **Physical properties**: Physical form (crystal & amorphous), particle size, shape, flow properties,	
	3.	Solubility profile (pKa, pH, partition coefficient), polymorphism	
	4.	b. **Chemical Properties**: Hydrolysis, oxidation, reduction, racemisation, polymerization	
	5.	BCS classification of drugs & its significant	
	6.	Application of preformulation considerations in the development of solid, liquid oral and parenteral dosage forms	
	7.	Its impact on stability of dosage forms.	

Unit- II Tablets (10 hrs)	8.	Introduction, ideal characteristics of tablets, classification of tablets.	
	9.	Excipients, Formulation of tablets, granulation methods	
	10.	Compression and processing problems.	
	11.	Equipments and tablet tooling.	
	12.	b. Tablet coating: Types of coating, coating materials, formulation of coating composition,	
	13.	Methods of coating, equipment employed and defects in coating.	
	14.	c. Quality control tests: In process and finished product tests	
	15.	**Liquid orals:** Formulation and manufacturing consideration of syrups and elixirs	
	16.	suspensions and emulsions;	
	17.	Filling and packaging; evaluation of liquid orals official in pharmacopoeia	
Unit- III Capsules (8 hrs)	18.	a**. Hard gelatin capsules:** Introduction, Production of hard gelatin capsule shells. size of capsules, Filling	
	19.	Finishing and special techniques of formulation of hard gelatin capsules, manufacturing defects.	
	20.	In process and final product quality control tests for capsules.	
	21.	b. **Soft gelatin capsules*:*** Nature of shell and capsule content, size of capsules	
	22.	Importance of base adsorption and minim/gram factors, production, in process and final product quality control tests.	
	23.	Packing, storage and stability testing of soft gelatin capsules and their applications.	
	24.	**Pellets:** Introduction, formulation requirements,	
	25.	Pelletization process, equipments for manufacture of pellets	
Unit IV Parenteral Products (10 hrs)	26.	Definition, types, advantages and limitations. Preformulation factors	
	27.	Essential requirements, vehicles, additives, importance of isotonicity	
	28.	b. Production procedure, production facilities and controls,	
	29.	aseptic processing	
	30.	c. Formulation of injections, sterile powders, large volume parenterals and lyophilized products.	
	31.	d. Containers and closures selection, filling and sealing of ampoules, vials and infusion fluids.	
	32.	Quality control tests of parenteral products.	
	33.	**Ophthalmic Preparations:** Introduction, formulation considerations;	

	34.	formulation of eye drops, eye ointments and eye lotions; methods of preparation;	
	35.	labeling, containers; evaluation of ophthalmic preparations	
Unit- V Cosmetics, Pharmaceutical Aerosols, Packaging Materials Science **(10 hrs)**	36.	**Cosmetics:** Formulation and preparation of the following cosmetic preparations: lipsticks, shampoos,	
	37.	cold cream and vanishing cream	
	38.	Tooth pastes, hair dyes and sunscreens.	
	39.	**Pharmaceutical Aerosols:** Definition, propellants, containers, valves, types of aerosol systems;	
	40.	formulation and manufacture of aerosols; Evaluation of aerosols;	
	41.	Quality control and stability studies.	
	42.	**Packaging Materials Science:** Materials used for packaging of pharmaceutical products,	
	43.	factors influencing choice of containers, legal and official requirements for containers,	
	44.	Stability aspects of packaging materials,	
	45.	Quality control tests.	

Teacher in-charge **Academic Incharge** **Principal**