



Faculty of Pharmacy
Diploma in Pharmacy (D. Pharm.)
(W. E. F.: 2023-24)
Document ID: SUTEPHD-01

Name of Faculty	:	Faculty of Pharmacy
Name of Program	:	Diploma in Pharmacy
Course Code	:	1DPH03
Course Title	:	Pharmaceutics
Type of Course	:	Basic Pharmaceutical Sciences
Year of Introduction	:	2023-24

Prerequisite	:	Zeal to learn the subject
Course Objective	:	This course will discuss the following aspects of 1. pharmaceutical dosage forms 2. Basic concepts, types and need 3. Advantages and disadvantages, methods of preparation / formulation packaging and labeling requirements 4. Basic quality control tests, concepts of quality assurance and good manufacturing practices Calculation of working formula from the official master formula 5. Formulation of dosage forms based on working formula 6. Appropriate Packaging and labelling requirements 7. Methods of basic quality control tests
Course Outcomes	:	Upon successful completion of this course, the students will be able to
	CO1	To Describe and understand different dosage forms and their formulation aspects
	CO2	To Explain and understand the advantages, disadvantages, and quality control tests of different dosage forms
	CO3	To Discuss and analyze the importance of quality assurance and good manufacturing practices
	CO4	Calculate the working formula from the given master formula
	CO5	Formulate the dosage form and dispense in an appropriate container
	CO6	Design the label with the necessary product and patient information
	CO7	Perform the basic quality control tests for the common dosage form

Teaching and Examination Scheme

Teaching Scheme (Contact Hours)			Credits	Examination Marks				
				Theory Marks		Practical Marks		Total Marks
L	T	P	C	SEE	CIA	SEE	CIA	
03	01	03	06	80	20	80	20	200

Legends: **L**-Lecture; **T**-Tutorial/Teacher Guided Theory Practice; **P** - Practical, **C** - Credit, **SEE** - Semester End Examination, **CIA** - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Content

Unit No.	Topics	Teaching Hours	Weightage	Mapping with COs
1	History of the profession of Pharmacy in India in relation to Pharmacy education, industry, pharmacy practice, and various professional associations. Pharmacy as a career Pharmacopoeia: Introduction to IP, BP, USP, NF and Extra Pharmacopoeia. Salient features of Indian Pharmacopoeia	07	9.33%	CO2 CO3
2	Packaging materials: Types, selection criteria, advantages and disadvantages of glass, plastic, metal, rubber as packaging materials	05	6.66%	CO1 CO2
3	Pharmaceutical aids: Organoleptic (Coloring, flavoring, and sweetening) agents Preservatives: Definition, types with examples and uses	03	4.00%	CO3 CO7
4	Unit operations: Definition, objectives/applications, principles, construction, and workings of: Size reduction: hammer mill and ball mill Size separation: Classification of powders according to IP, Cyclone separator, Sieves and standards of sieves Mixing: Double cone blender, Turbine mixer, Triple roller mill and Silverson mixer homogenizer Filtration: Theory of filtration, membrane filter and sintered glass filter Drying: working of fluidized bed dryer and process of freeze drying Extraction: Definition, Classification, applications	09	12.00%	CO1 CO2 CO4 CO5 CO7
5	Tablets - coated and uncoated, various modified tablets (sustained release, extended-release, fast dissolving, multi-layered, etc.)	08	10.66%	CO4 CO5 CO6 CO7
	Capsules - hard and soft gelatin capsules	04	5.33%	
	Liquid oral preparations - solution, syrup, elixir,	06	8.00%	

	emulsion, suspension, dry powder for reconstitution			
	Topical preparations - ointments, creams, pastes, gels, liniments and lotions, suppositories & pessaries	08	10.66%	
	Nasal preparations, Ear preparations	02	2.66%	
	Powders and granules - Insufflations, dusting powders, effervescent powders, and effervescent granules	03	4.00%	
	Sterile formulations - Injectables, eye drops and eye ointments	06	8.00%	
	Immunological products: Sera, vaccines, toxoids, and their manufacturing methods.	04	5.33%	
6	Basic structure, layout, sections, and activities of pharmaceutical manufacturing plants Quality control and quality assurance: Definition and concepts of quality control and quality assurance, current good manufacturing practice (cGMP), Introduction to the concept of calibration and validation	05	6.66%	CO3 CO4
7	Novel drug delivery systems: Introduction, Classification with examples, advantages, and challenges	05	6.66%	CO1 CO2

Suggested List of Experiments

Sr. No.	Name of Experiment	Teaching Hours
1	Handling and referring the official references: Pharmacopoeias, Formularies, etc. for retrieving formulas, procedures, etc.	03
2	Formulation of the following dosage forms as per monograph standards & dispensing with appropriate packaging and labeling Liquid Oral: Simple syrup, Piperazine citrate elixir, Aqueous Iodine solution Emulsion: Castor oil emulsion, Cod liver oil emulsion Suspension: Calamine lotion, Magnesium hydroxide mixture Ointment: Simple ointment base, Sulphur ointment Cream: Cetrimide cream Gel: Sodium alginate gel Liniment: Turpentine liniment, White liniment BPC Dry powder: Effervescent powder granules, Dusting powder Sterile Injection: Normal Saline, Calcium gluconate Injection	39



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	Hard Gelatin Capsule: Tetracycline capsules Tablet: Paracetamol tablets	
3	Formulation of at least five commonly used cosmetic preparations - e.g. cold cream, shampoo, lotion, toothpaste etc	15
4	Demonstration on various stages of tablet manufacturing processes	03
5	Appropriate methods of usage and storage of all dosage forms including special dosage such as different types of inhalers, spacers, insulin pens	03
6	Demonstration of quality control tests and evaluation of common dosage forms viz. tablets, capsules, emulsion, sterile injections as per the monographs	12

Suggested List of Assignments

Sr. No.	Name of Assignments
1	Various systems of measures commonly used in prescribing, compounding and dispensing practices
2	Market preparations (including Fixed Dose Combinations) of each type of dosage forms, their generic name, minimum three brand names and label contents of the dosage forms mentioned in theory/practical
3	Overview of various machines / equipments / instruments involved in the formulation and quality control of various dosage forms / pharmaceutical formulations.
4	Overview of extemporaneous preparations at community / hospital pharmacy vs. manufacturing of dosage forms at industrial level
5	Basic pharmaceutical calculations: ratios, conversion to percentage fraction, alligation, proof spirit, isotonicity

Field Visit

Sr. No.	Field Visit
1.	Field Visit of pharmaceutical Industry

Suggested Distribution of Theory Marks Using Bloom's Taxonomy						
Level	Remembrance	Understanding	Application	Analyse	Evaluate	Create
Weightage	-	28.6	14.3	14.3	-	42.8

NOTE: This specification table shall be treated as a general guideline for the students and the teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Major Equipment/ Instruments and Software Required

Sr. No.	Name of Major Equipment/ Instruments and Software
1	Digital balance (10mg)
2	Standard sieves, sieve no. 8, 10, 12,22,24, 44, 54, 60, 80, 85, 100, 120
3	Tablet dissolution test apparatus IP (Digital single/ double Unit)
4	Digital pH meter
5	Hot Plate
6	Distillation Unit
7	Hot air oven
8	Electric water bath unit
9	Stalagmometer
10	Desiccator
11	Buchner Funnels (Medium)
12	Filtration assembly
13	Andreasen's Pipette
14	Ointment spatula
15	Pestle and mortar porcelain
16	Refrigerator
17	Micrometre slide Eyepiece
18	Micrometre slide Stage
19	Viscometer Ostwald/Brookfield
20	Stop watch
21	Sintered glass filter with vacuum

Suggested Learning Websites

Sr. No.	Name of Website
1	https://pci.nic.in/pdf/Syllabus_B_Pharm.pdf
2	https://www.aicte-india.org/downloads/bpharma.pdf
3	https://www.ipc.gov.in/
4	https://www.ayush.gov.in/
5	https://ayudmla.gujarat.gov.in/home.php
6	https://www.fda.gov/
7	https://www.pharmacopoeia.com/
8	https://ipapharma.org/
9	https://gpat.nta.nic.in/
10	https://drnaitikrivedi.com/
11	https://gdc4gpat.com/course/gpat/
12	https://niscpr.res.in/
13	https://delnet.in/



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14	https://ihubgujarat.in/
15	https://www.ssipgujarat.in/

Reference Books

Sr. No.	Name of Reference Books
1	History of Pharmacy in India by Dr. Harikishan Singh
2	Indian Pharmacopoeia, Govt. of India Publication
3	A Text book of Pharmaceuticals Formulation by B.M. Mithal, Vallabh Prakashan.
4	Bentleys' Text book of Pharmaceutics, Editor E.A. Rawlins, Elsevier Int.,
5	The Theory and Practice of Industrial Pharmacy. Leon Lachman, Herbert Lieberman and Joseph Kanig, Editors, Lea and Febiger, Philadelphia. Varghese Publishing House
6	Responsible Use of Medicines: A Layman's Handbook, www.ipapharma.org / publications