



Program	Master of Pharmacy (M.Pharm)	Semester - 2
Type of Course	-	
Prerequisite		
Course Objective	-	
Effective From A.Y.	2023-24	

Teaching Scheme (Contact Hours)				Examination Scheme				
Lecture	Tutorial	Lab	Credit	Theory Marks		Practical Marks		Total Marks
				External Marks (T)	Internal Marks (T)	External Marks (P)	Internal Marks (P)	
4	-	-	4	75	25	-	-	100

SEE - Semester End Examination, CIA - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Content		T - Teaching Hours W - Weightage	
Sr.	Topics	T	W
1	Targeted Drug Delivery Systems Concepts, Events and biological process involved in drug targeting. Tumor targeting and Brain specific delivery.	12	20
2	Targeting Methods Introduction preparation and evaluation. Nano Particles & Liposomes: Types, preparation and evaluation.	12	20
3	Micro Capsules / Micro Spheres Types, preparation and evaluation, Monoclonal Antibodies; preparation and application, preparation and application of Niosomes, Aquasomes, Phytosomes, Electrosomes.	12	20
4	Pulmonary Drug Delivery Systems Aerosols, propellents, Containers Types, preparation and evaluation, Intra Nasal Route Delivery systems; Types, preparation and evaluation.	12	20
5	Nucleic acid based therapeutic delivery system Gene therapy, introduction (ex-vivo & in-vivo gene therapy). Potential target diseases for gene therapy (inherited disorder and cancer). Gene expression systems (viral and nonviral gene transfer). Liposomal gene delivery systems. Biodistribution and Pharmacokinetics. knowledge of therapeutic antisense molecules and aptamers as drugs of future.	12	20
Total		60	100

Suggested Distribution Of Theory Marks Using Bloom's Taxonomy			
Level	Remembrance	Understanding	Application
Weightage	60	30	10

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.

Course Outcomes	
At the end of this course, students will be able to:	
C01	To know and understand the concept and approaches of various novel drug delivery systems
C02	To know and understand the concept of targeted drug delivery systems



Reference Books

1.	Novel Drug Delivery Systems (TextBook) By Y W. Chien Marcel Dekker, Inc., New York 2, Pub. Year 1992
2.	CONTROLLED & NOVEL DRUG DELIVERY (TextBook) By N.K. JAIN CBS PUBLISHERS, Pub. Year 1997
3.	Controlled Drug Delivery - concepts and advances (TextBook) By S.P.Vyas and R.K.Khar, Vallabh Prakashan, New Delhi, Pub. Year 2002
4.	LANCET By DOLOVICH M.B. LANCET, Pub. Year 2011
5.	CONTROLLED DRUG DELIVERY SYSTEM (TextBook) By R.K. KHAR CBS PUBLISHERS, Pub. Year 2001
6.	NANOMEDICINE SYSTEM REVIEW By MS. UMASHANKAR ELSEVEIR, Pub. Year 2010
7.	Advanced drug delivery reviews By Melvin M.E. Elseveir, Pub. Year 2015