



Lesson Plan

College Name: RR College of Pharmacy	Academic year :2023-2024
Programme : M.Pharm.	Semester or Year : II
Subject Name :Molecular Pharmaceutics	Subject Code: MPH201T
Total contact hours: 60	IA Marks: 35
Faculty Name : Prof. Hindustan Abdul Ahad	Reviewed by : RA <i>M. Hindustan Ahad</i>

Significance of the Subject:

This course is designed to impart knowledge on the area of advances in novel drug delivery systems.

PROGRAM OUTCOMES (POS)

1. Pharmacy Knowledge
2. Planning Abilities
3. Problem analysis
4. Modern tool usage
5. Leadership skills
6. Professional Identity
7. Pharmaceutical Ethics
8. Communication
9. The Pharmacist and society
10. Environment and sustainability
11. Life-long learning

Programme Specific outcomes(PSOs)

PSO1: Know the various approaches for development of novel drug delivery systems.

PSO2: Know the criteria for selection of drugs and polymers for the development of NTDS.

PSO3: Know the formulation and evaluation of novel drug delivery systems

Course Outcomes

CO 1: Understand the various approaches for the development of targeted drug delivery systems.

CO 2: Explain the types of targeting methods of nanoparticles and liposomes.

CO 3: Understand the various approaches for development and evaluation of Microcapsules/ microspheres, Monoclonal Antibodies, Niosomes, Aquasomes, Phytosomes, Electrosomes

CO 4: Explain approaches for the development and evaluation of pulmonary drug delivery systems.

CO 5: Access the various approaches for development of veterinary drug delivery systems.

Class No	Unit No. and Hours	Topic to be covered	Date		Status/Remarks
			Planned	Time	
1	Unit-I (12h)	Targeted Drug Delivery Systems : Introduction	23/7/24	9.30-10.30	Completed
2		Concepts of TDDS	23/7/24	10.30-11.30	Completed
3		Events of TDDS	24/7/24	1.15-2.15	Completed
4		Biological process involved in drug targeting.	25/7/24	4.15-5.15	Completed
5		Biological processes and applications	30/7/24	9.30-10.30	Completed
6		Tumor targeting	30/7/24	11.30-12.30	Completed
7		Tumor targeting methods.	31/7/24	1.15-2.15	Completed
8		Explanation of tumor targeting methods.	31/7/24	4.15-5.15	Completed
9		Brain specific delivery.	1/8/24	9.30-10.30	Completed
10		Brain specific delivery.	1/8/24	10.30-11.30	Completed
11		Brain specific delivery.	6/8/24	9.30-10.30	Completed
12		Applications	6/8/24	11.30-12.30	Completed
13	Unit-II (12h)	Targeting Methods Introduction	7/8/24	1.15-2.15	Completed
14		Nano Particles: Introduction	7/8/24	4.15-5.15	Completed
15		Preparation of Nano Particles	8/8/24	9.30-10.30	Completed
16		Preparation of Nano Particles	8/8/24	10.30-11.30	Completed
17		Preparation of Nano Particles	10/8/24	9.30-10.30	Completed
18		Evaluation of Nano Particles	13/8/24	9.30-10.30	Completed
19		Evaluation of Nano Particles	13/8/24	11.30-12.30	Completed
20		Liposomes - types	14/8/24	1.15-2.15	Completed
21		Preparation of liposomes	14/8/24	4.15-5.15	Completed
22		Preparation of liposomes	20/8/24	9.30-10.30	Completed
23		Evaluation of liposomes	20/8/24	11.30-12.30	Completed
24		Evaluation of liposomes	21/8/24	1.15-2.15	Completed
25	Unit-III (12h)	Microspheres- Introduction, Concept	21/8/24	4.15-5.15	Completed
26		Types and Preparation	22/8/24	9.30-10.30	Completed
27		Evaluation	22/8/24	10.30-11.30	Completed
28		Monoclonal Antibodies preparation	24/8/24	9.30-10.30	Completed
29		Monoclonal Antibodies application	27/8/24	9.30-10.30	Completed
30		Preparation of Niosomes,	27/8/24	11.30-12.30	Completed
31		Application of Niosomes	28/8/24	1.15-2.15	Completed
32		Preparation of Aquasomes.	28/8/24	4.15-5.15	Completed
33		Application of Aquasomes.	29/8/24	9.30-10.30	Completed
34		Preparation of Phytosomes.	29/8/24	10.30-11.30	Completed
35		Application of Phytosomes.	3/9/24	9.30-10.30	Completed
36		Preparation and application of Electrosomes.	3/9/24	11.30-12.30	Completed
37	Unit-IV (12h)	Pulmonary DDS : Introduction	4/9/24	1.15-2.15	Completed
38		Aerosols	4/9/24	4.15-5.15	Completed
39		Types	5/9/24	9.30-10.30	Completed
40		Materials for aerosol	5/9/24	10.30-11.30	Completed
41		Propellants	10/9/24	9.30-10.30	Completed
42		Various types Propellants	10/9/24	11.30-12.30	Completed
43		Containers Types	11/9/24	1.15-2.15	Completed
44		Preparation	11/9/24	4.15-5.15	Completed
45		Evaluation	12/9/24	9.30-10.30	Completed
46		Intra Nasal Delivery systems: Preparation	12/9/24	10.30-11.30	Completed
47		Intra Nasal Delivery systems: Preparation	14/9/24	9.30-10.30	Completed
48		Evaluation	17/9/24	9.30-10.30	Completed
49	Unit-V (12h)	Veterinary DDS: Introduction	17/9/24	11.30-12.30	Completed
50		Tablets	18/9/24	1.15-2.15	Completed
51		Bolus	18/9/24	4.15-5.15	Completed
52		Feed Additives	19/9/24	9.30-10.30	Completed
53		Drinking water medication	19/9/24	10.30-11.30	Completed
54		Oral paste	24/9/24	9.30-10.30	Completed
55		Drenchers	24/9/24	11.30-12.30	Completed
56		Tubing product	25/9/24	1.15-2.15	Completed
57		Revision	25/9/24	4.15-5.15	Completed
58		Revision/Old QP	26/9/24	9.30-10.30	Completed
59		Revision/Old QP	26/9/24	10.30-11.30	Completed
60		Revision/Old QP	28/9/24	9.30-10.30	Completed



P.K.M Educational Trust (R) R.R. COLLEGE OF PHARMACY

Chikkabanavara, Bengaluru-560090

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Bloom's Taxonomy Level

L1-Remembering L2-Understanding L3-Appling L4-Analysing L5-Evaluating L6-Creating

Text Books:

1	Y W. Chien, Novel Drug Delivery Systems, 2nd edition, revised and expanded, Marcel Dekker, Inc., New York, 1992.
2	S.P.Vyas and R.K.Khar, Controlled Drug Delivery - concepts and advances, VallabhPrakashan, New Delhi, First edition 2002.
3	3. N.K. Jain, Controlled and Novel Drug Delivery, CBS Publishers & Distributors, NewDelhi, First edition 1997 (reprint in 2001).

Journals:

1	Indian Journal of Pharmaceutical Sciences (IPA)
2	Indian drugs (IDMA)
3	Journal of controlled release (Elsevier Sciences) desirable 4. Drug Development and Industrial Pharmacy (Marcel & Decker) desirable

Reference Books:

1	Y W. Chien, Novel Drug Delivery Systems, 2nd edition, revised and expanded, Marcel Dekker, Inc., New York, 1992.
2	S.P.Vyas and R.K.Khar, Controlled Drug Delivery - concepts and advances, Vallabh Prakashan, New Delhi, First edition 2002.
3	N.K. Jain, Controlled and Novel Drug Delivery, CBS Publishers & Distributors, NewDelhi, First edition 1997 (reprint in 2001).

Self-Study topics (not included in syllabus)

Sl.No.	Self-Study topics	Suggested reference	Cos
1	Micro Spheres	Y W. Chien, Novel Drug Delivery Systems, 2nd edition, revised and expanded, Marcel Dekker, Inc., New York	Co1
2	Aerosols	N.K. Jain, Controlled and Novel Drug Delivery, CBS Publishers & Distributors, NewDelhi, First edition 1997 (reprint in 2001).	Co3
3	Veterinary Tablets	S.P.Vyas and R.K.Khar, Controlled Drug Delivery - concepts and advances, Vallabh Prakashan, New Delhi, First edition 2002.	Co5

Course Articulation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
CO1	✓										✓	✓	✓	✓	✓
CO2	✓										✓	✓	✓	✓	✓
CO3	✓										✓	✓	✓	✓	✓
CO4	✓										✓	✓	✓	✓	✓
CO5	✓										✓	✓	✓	✓	✓

Curricula Gap Analysis

Sl.No.	Curricula Gap	Action taken	Date-Month-Year	Resource Person with designation	% of students present	Relevance to POs, PSOs
1	Individual application	Conducted for individual application	28 Sep 2024	Dr. Kusur Raja M. Kodalya Basalam	100%	PS01 & PS0-2

Signature of Faculty	Signature of HOD
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