

18BP079

NOVEL DRUG DELIVERY SYSTEMS

Hours Per Week :

L	T	P	CP	CL
3	1	-	-	4

Total Hours :

L	T	P	WA/RA	SSH/HSH	CS	SA	S	BS
45	-	-						

SCOPE:

This subject is designed to impart basic knowledge on the area of novel drug delivery systems.

COURSE OUTCOMES:

Upon completion of the course, the student will be able to achieve the following outcomes:

COs	Course Outcomes	POs	PSOs
1	To understand the various approaches for development of novel drug delivery systems.	24	1,2
2	To understand the criteria for selection of drugs and polymers for the development of novel drug delivery systems, their formulation and evaluation.	24	1,2

UNIT - I **10HOURS**

CONTROLLED DRUG DELIVERY SYSTEMS: Introduction, terminology/definitions and rationale, advantages, disadvantages, selection of drug candidates. Approaches to design controlled release formulations based on diffusion, dissolution and ion exchange principles. Physicochemical and biological properties of drugs relevant to controlled release formulations

POLYMERS: Introduction, classification, properties, advantages and application of polymers in formulation of controlled release drug delivery systems.

UNIT - II **10HOURS**

MICROENCAPSULATION: Definition, advantages and disadvantages, microspheres/microcapsules, micro particles, methods of microencapsulation, applications.

MUCOSAL DRUG DELIVERY SYSTEM: Introduction, Principles of bio adhesion / mucoadhesion, concepts, advantages and disadvantages, transmucosal permeability and formulation considerations of buccal delivery systems.

IMPLANTABLE DRUG DELIVERY SYSTEMS: Introduction, advantages and disadvantages, concept of implants and osmotic pump.

UNIT - III **10HOURS**

TRANSDERMAL DRUG DELIVERY SYSTEMS: Introduction, Permeation through skin, factors affecting permeation, permeation enhancers, basic components of TDDS, formulation approaches.

GASTRO RETENTIVE DRUG DELIVERY SYSTEMS: Introduction, advantages, disadvantages, approaches for GRDDS – Floating, high density systems, inflatable and gastro adhesive systems and their applications.

NASO PULMONARY DRUG DELIVERY SYSTEM: Introduction to Nasal and Pulmonary routes of drug delivery, Formulation of Inhalers (dry powder and metered dose), nasal sprays, nebulizers.

UNIT - IV **08HOURS**

TARGETED DRUG DELIVERY: Concepts and approaches advantages and disadvantages, introduction to liposome's, noisome, nanoparticles, monoclonal antibodies and their applications

UNIT - V **07HOURS**

OCULAR DRUG DELIVERY SYSTEMS: Introduction, intra ocular barriers and methods to overcome – Preliminary study, ocular formulations and ousters.

INTRAUTERINE DRUG DELIVERY SYSTEMS: Introduction, advantages and disadvantages, development of intra uterine devices (IUDs) and applications.

RECOMMENDED BOOKS: (LATEST EDITIONS)

1. Y W. Chien, Novel Drug Delivery Systems, 2nd edition, revised and expanded, Marcel Dekker, Inc., New York, 1992.
2. Robinson, J. R., Lee V. H. L, Controlled Drug Delivery Systems, Marcel Dekker, Inc., New York, 1992.
3. Encyclopedia of Controlled Delivery. Edith Mathiowitz Published by Wiley Inter science Publication, John Wiley and Sons, Inc, New York. Chichester / Weinheim.
4. N.K. Jain, Controlled and Novel Drug Delivery, CBS Publishers & Distributors, New Delhi, First edition 1997 (reprint in 2001).
5. S.P. Vyas and R.K. Char, Controlled Drug Delivery -concepts and advances, Vallabh Prakashan, New Delhi, First edition 2002.

JOURNALS

1. Indian Journal of Pharmaceutical Sciences(IPA).
2. Indian Drugs(IDMA).
3. Journal of Controlled Release (Elsevier Sciences)
4. Drug Development and Industrial Pharmacy (Marcel & Decker).
5. International Journal of Pharmaceutics (Elsevier Sciences).

