
IV Year B.Tech. Bioinformatics I - Semester	L	T	P	To	C
	4	-	-	4	4

BT415 BIOPHARMACEUTICAL TECHNOLOGY (ELECTIVE-IV)

Course Description and Objectives :

To give an awareness to the student about history, sources of drugs, pharmacodynamics and pharmacokinetics and drug manufacturing. Also about production and applications of biopharmaceuticals and drug delivery systems.

Course Outcomes :

Student gains knowledge on

1. History and sources of drugs, different dosage forms and routes of drug administration.
2. Pharmacodynamic and pharmacokinetic mechanisms
3. GMP, Manufacturing facilities, sources, production procedures, analysis and formulation of drugs and Biopharmaceuticals
4. Production and medical applications of therapeutic proteins like interferons, interleukins, insulin, erythropoietin, hGH etc.,
5. Biomaterials and different drug delivery systems.

UNIT I : Introduction to Pharmaceuticals :

History & Definition of Drugs. Sources of Drugs - Plant, Animals, Microbes and Minerals, Different dosage forms, Routes of drug administration.

UNIT II : Pharmacodynamics and Pharmacokinetics :

Physico-Chemical Principles, Pharmacodynamics- Mechanism of drug action, Drug receptors, and Physiological receptors: structural and functional families. Pharmacokinetics - Drug absorption, Factors that affect the absorption of drugs, Distribution of drugs, Biotransformation of drugs, Bioavailability of drugs.

UNIT III : Drug manufacturing processes :

Good manufacturing practices, Manufacturing facilities, Sources of Biopharmaceuticals, Production & analysis of Biopharmaceuticals. Recent advances in the manufacture of drugs using r-DNA technology.

UNIT IV : Production and Applications of Biopharmaceuticals:

Production of Therapeutic Proteins, Hormones, Cytokines - Interferon's, Interleukins I & II, Tumor Necrosis Factor (TNF); Nucleic acids. Role of Biopharmaceuticals in treatment of various health disorders

UNIT V : Drug Delivery Systems, Biomaterials & their Applications :

Controlled and sustained delivery of drugs. Biomaterial for the sustained drug delivery. Liposome mediated drug delivery. Drug delivery methods for therapeutic proteins.

TEXT BOOKS :

1. Leon Lachman, H.A. Lieberman & J.L.Kanig, Theory & Practice of Industrial Pharmacy, 3rd ed. Varghese Publishg House, Bombay, 1987.
2. Gary Walsh - Biopharmaceuticals: Biochemistry & Biotechnology, 2nd Ed. John Wiley & Sons Ltd., England. 1998.

REFERENCE BOOKS :

1. Milo Gibaldi - Biopharmaceutics and Clinical Pharmacokinetics, First edition, Pharma Book Syndicate, 2006.
2. Remington's Pharmaceutical Sciences, Mark Publications & Co.
3. Tripathi K.D. - Essentials of Medical Pharmacology, 6th edition, Jaypee Publication, 2006.
4. Brahmankar, D.M., Sunil, B.Jaiswals - Biopharmaceutics & Pharmacokinetics a Treatise , 2nd edition, M.K.Jain Publication, Delhi, 2009.