



**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**Integrated Master of Science (Biotechnology)**

**Semester: 5**

**Subject Name: Pharmaceutical Biotechnology**

**Subject Code: 1350404**

**Teaching and Examination Scheme:**

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
			ESE (E)	PA (M)	ESE (V)	PA (I)		
4	0	0	4	70	30	0	0	100

**Prerequisite:**

This course is designed to illustrate the importance of fundamental and conceptual aspects of

**Rationale:**

This course is designed to illustrate the importance of fundamental and conceptual aspects of pharmacological sciences and will be helpful in explaining the mechanistic aspects of specific categories of drugs including manufacturing and quality control issues. This course will elaborate upon the mechanistic aspects of other drug categories and extend knowledge in Biopharmaceuticals

**Course Content:**

Unit No.	Content	No. of Hours	Weightage (%)
1	<b>Introduction to Pharmaceutical Biotechnology</b> History of pharmacy, the pharmaceutical industry & development of drugs; economics and regulatory aspects, quality management; GMP.	12	20
2	<b>Drug Kinetics and Bio-pharmaceutics</b> Mechanism of drug absorption, distribution, metabolism and excretion – factors affecting the ADME process, bioequivalence, pharmacokinetics	12	20
3	<b>Principles of Drug Manufacture</b> Liquid dosage forms – solutions, suspensions and emulsions, Topical applications – ointments, creams, suppositories, Solid dosage forms – powders, granules, capsules, tablets, coating of tablets, Aerosols. Preservation, packing techniques.	12	20
4	<b>Advances in Drug Delivery</b> Advanced drug delivery systems– controlled release, transdermal, liposomes and drug targeting.	12	20
5	<b>Biopharmaceuticals</b> Understanding principles of pharmacology, pharmacodynamics Study of a few classes of therapeutics like laxatives, antacids and drugs used in peptic ulcers, drugs used in coughs and colds, analgesics, contraceptives, antibiotics, hormones	12	20
<b>Total Hours:</b>		60	



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**Textbook:**

1. Delgado JN, Remers WA eds —Wilson & Gisvolds's Text Book of Organic Medicinal & Pharmaceutical Chemistry| Lippincott, New York. Loyd, V., Jr. Howard C A and Ansel (2013) Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems, Publisher: Wolters Kluwer Health
2. Satoskar RS, Rege N, Bhandarkar SD (2015) Pharmacology and Pharmacotherapeutics, 24<sup>th</sup>edn Elsevier India.

**Reference Books:**

1. Microbiology and Sterility Assurance in Pharmaceuticals and Medical Devices Editors: Madhu Raju Saghee, Tim Sandle and Edward C. Tidswell
2. Brunton L, Chabner BA and Knollman B (2011) Goodman and Gilman's The Pharmacological Basis of Therapeutics, McGraw Hill Education; 12<sup>th</sup>Edition.
3. Khar RK and Vyas SP ( 2013) Lachman/Liebermans: The Theory and Practice of Industrial Pharmacy, Publisher: CBS; 4<sup>th</sup>Edition.

**Course Outcomes:**

No.	Course Outcomes	RBT Level*
1	Understand the essential aspects of pharmacokinetics / pharmacodynamics and solve pharmacokinetics and pharmacodynamics-related problems	UN,RM,AP,EV
2	Having a clear understanding of the subject related concepts and contemporary issues	UN,RM,AP,EV

\*RM: Remember, UN: Understand, AP: Apply, AN: Analyze, EL: Evaluate, CR: Create

**Suggested Course Practical List:**

**List of Laboratory/Learning Resources Required**

1. <https://www.gmp-compliance.org/training/gmp-course-conference/pharmaceutical-biotechnology-for-non-biotechnologists>