

Books: -

S.No.	Name of Books/Authors/Publisher
1.	Introduction to Biochemical Engineering by D.G. Rao. Publisher: Tata McGraw-Hill Education, 2009
2.	Bioprocess Engineering Principles by P. Doran, Elsevier Science, 2013
3.	Principles of fermentation technology by Stanbury and Whitaker, Elsevier Science, 2016
4.	Chemical reaction engineering by O.Levenspiel. Publisher: John Wiley and sons Inc., 1999
5.	Coulson's and Richardson's Chemical Engineering by J.F. Richardson and D.G. Peacock Publisher: Asian books, 1994

Details of course:- Departmental core Course1 (Introduction to Biotechnology) (BT 104)

Course Title	Course Structure			Pre-requisite
	L	T	P	
Introduction to Biotechnology (BT 104)	3	1	0	Nil

Course Objective: The course integrates the fundamental concepts of life and physical sciences together with the basic laboratory skills necessary in the biological sciences. It provides foundational concepts in a broad spectrum of disciplines such as biochemistry, genetic engineering, biophysics, microbiology, molecular and cell biology

Course Outcomes (CO):

1. Define global significance of biotechnology and examine the potential applications of Biotechnology in all sectors of life
2. Compare and contrast prokaryotic and eukaryotic cellular architecture
3. Comprehend the functioning of various biomolecules and enzymes and to compare and contrast various microorganisms
4. Explain the underlying mechanism of gene expression and to explain, demonstrate, and appraise genetic engineering of organisms for human welfare and formulate new ideas
5. Explain and translate separation, purification and identification techniques for biomolecules in research

S. No.	Content	Contact Hours
Unit 1	Introduction: Definition, scope of Biotechnology; Applications of Biotechnology in Agriculture, Health, Food, Environment and Industry	8
Unit 2	Cell Structure: Architecture of prokaryotic and eukaryotic cells; Functions of various cell organelles; Cell motility	9

Unit 3	Fundamentals of Biochemistry and Microbiology: Classification and functions of carbohydrates, proteins, lipids, nucleic acids; General characteristics, nomenclature and classification of enzymes; Types and characteristics of microbes	7
Unit 4	Basic Concepts of Molecular Biology and Genetic Engineering: Structure of DNA and RNA; Gene organization; Central Dogma of Molecular Biology; Concept of recombinant DNA technology	10
Unit 5	Basics of Biophysical Methods: Electrophoresis, Centrifugation, Chromatography - Principle, procedure and applications	8
	Total	42

Books:

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1.	Lehninger's Principle of Biochemistry by Nelson and Cox. Publisher: W. H. Freeman (2017)
2.	Cell and Molecular Biology by Jacobs. Publisher: CBS (2016)
3.	Cell and Molecular Biology by P. Khanna. Publisher: IK Intl. (2008)
4.	Molecular Cell Biology by Lodish. Publisher: W. H. Freeman (2016)
5.	Biochemistry by Voet and Voet. Publisher: Wiley (2010)
6.	Microbiology by Pelczar et al. Publisher: Tata McGraw Hill (2001)
7.	Microbiology by Tortora et al. Publisher: Pearson Education (2016)
8.	Molecular Biology of the Gene by Watson et al. Publisher: Pearson (2014)
9.	Gene Cloning & DNA Analysis: An Introduction by TA Brown. Publisher: Wiley-Blackwell (2016)
10.	Genetic Engineering by Rastogi and Pathak. Publisher: OUP (2009)
11.	Wilson and Walker's Principles and Techniques of Biochemistry and Molecular Biology, Hoffman and Clokier (ed.) Publisher: CUP (2018)