Books:-

S.No.	Name of Books/ Author/Publisher
1.	All About Bioinformatics: From Beginner to Expert- Yasha Hasija (2023)
2.	Hands on Data Science for Biologists Using Python- Yasha Hasija, Rajkumar Chakraborty (2021)
3.	Bioinformatics and Functional Genomics, 3rd Edition Jonathan Pevsner (Wiley-Blackwell; published in association with Oxford University Press) (2015)
4.	Translational Biotechnology:A Journey from Laboratory to Clinics. Editor- Yasha Hasija (2021)
5.	Introduction to Bioinformatics - Arthur M. Lesk Oxford University Press (2019)

Details of course:-

Course Title	Course Structure			Pre-Requisite
	L	T	P	
Biochemistry (210)	3	0	2	

Course Objective:
To impart basic knowledge of biochemistry and biochemical principles for cell metabolism and bioenergetics.

Course Outcome (CO):
1 Analyze the biogenic properties of water and interactions in biological systems
2 Compare different types of biomolecules
3 Analyze carbohydrate metabolism
4 Explain digestion, absorption and transport of lipid and cholesterol metabolism
5 Understand amino acid and nucleotide metabolism

S.No.	Content	Contact Hours
Unit 1	Chemical Foundations of Biology: Properties of water; Biogenic properties of water; Buffers; Covalent bonds, Non-covalent interactions in biological systems	7
Unit 2	Introduction to Biomolecules: Classification, structure and functions of Carbohydrates, Lipids, Proteins, Nucleic acids; Vitamins	8
Unit 3	Carbohydrate Metabolism: Glycolysis; Citric acid cycle; Gluconeogenesis, Pentose Phosphate Pathway, Electron transport chain; Oxidative phosphorylation; Regulation of carbohydrate metabolism	10
Unit 4	Lipid Metabolism: Lipid digestion, absorption and transport; Fatty acid oxidation; Ketone bodies; Fatty acid biosynthesis; Regulation of fatty acid metabolism; Cholesterol metabolism	9

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Unit 5	Amino acid and Nucleotide Metabolism: Amino acid deamination; Urea cycle; Amino acid biosynthesis; Amino acids as biosynthetic precursors; Metabolism of purines and pyrimidines; Biosynthesis of nucleotide coenzymes	8
	Total	42

Books:-

S.No.	Name of Books/ Author/Publisher
1.	Lehninger's Principle of Biochemistry by DL Nelson, MM Cox. Publisher: WH Freeman
2.	Biochemistry by D Voet, JG Voet. Publisher: Wiley
3.	Harper's Illustrated Biochemistry by VW Rodwell, D Bender, KM Botham, PJ Kennelly, PA Weil. Publisher: McGraw Hill
4.	Biochemistry by CK Mathews, KE Van Holde, KG Ahern. Publisher: Benjamin/Cummings
5	Biochemistry by L Stryer. Publisher: WH Freeman and Company

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Scheme and Syllabus (BTech 3rd year)

Fifth semester

S.No.	Subject code	Subject	Credits	Category
1.	BT301	Immunology and Immunotechnology (Department core course-10)	4	DCC
2.	BT303	Genetic Engineering (Department core course-11)	4	DCC
3.	BT305	Environmental Biotechnology (Department core course-12)	4	DCC
4.	BT307	Engineering economics/ Fundamentals of Management	3	SEC
5.	BT3xx	Department Elective Course-1	4	DEC
6.	GEC-1	Generic Elective Course-1	4	GEC
		Total	23	

Sixth semester

S.No.	Subject code	Subject	Credits	Category
1.	BT302	Plant Biotechnology (Department core course-13)	4	DCC
2.	BT304	Animal Biotechnology (Department core course-14)	4	DCC
3.	BT306	Engineering economics/ Fundamentals of Management	3	SEC
4.	BT3xx	Department Elective Course-2	4	DEC
5.	BT3xx	Department Elective Course-3	4	DEC
6.	GEC-2	Generic Elective Course-2	4	
		Total	23	

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