BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI, HYDERABAD CAMPUS
FIRST SEMESTER 2021-2022
Course Handout (Part-II)

Date : 20/08/2021

In addition to part I (General Handout for all courses appended to the time table this portion gives further specific details regarding the course.

Course No. **: BIO F211**
Course Title **: BIOLOGICAL CHEMISTRY**
Instructor-in-Charge **: DEBASHREE BANDYOPADHYAY**
Instructor(s) **: Debashree Bandyopadhyay, (L), Himaja D (T)**

1.Course Description & Objective: Biochemistry is an introductory course to explain basic biochemical and structural features of different bio-macromolecules. This describes cellular and molecular processes and biochemical pathways emphasizing the energetics within living systems. Biochemistry course will help the students to relate the biochemical processes with clinical insights.

2.Text Book (T):
Campbell, Marry K and Farell, Biochemistry, Thomson Learning ,5th Edition, Copyright 2006

3.Reference Books
R1. Biochemistry. Berg, Tymoczko, Gatto & Stryer. 6th Edition, 2007
R2. Nelson and Cox. Principles of Biochemistry (Lehninger), 5th Edition. W.H. Freeman Publishers.
R3. Donald Voet et. al., Biochemistry, Wiley, 1993.

4 Course Plan:

Lec. No.	Topics to be covered	Learning objectives	Chapter in the Text Book
1	Cellular Organization	1. Cellular organization, Spontaneity in biochemical reactions	T1,
2-13		1. Amino Acids, Protein- structure & function, protein folding & conformation, 2. Protein purification and characterization 3. Lipids 4. Nucleic acids 5. Carbohydrates	T3, T4, T5, T8, T9, T10, T16 Class Notes
14-18	Enzymes	1. Classification 2. Enzyme kinetics and Mechanism of action 3. Enzyme inhibitors and regulators 4. Allosteric enzymes 5. Isoenzymes 6. Vitamins and coenzymes	T6, T7
19-20	Biochemical Energetics	1. Concept of Free Energy 2. Energy Rich Compounds 3. Coupling Reactions 4. Oxidation-Reduction	R2(13), T15, Lecture Notes
21-28	Carbohydrate Metabolism	1. Glycolysis 2. Gluconeogenesis 3. 4. Regulation of Glycolysis 5. TCA cycle 6. Glyoxylic acid cycle 7. Glycogen breakdown	T17, T18, T19,

29-31	Biological Oxidations	1. Components involved in ETC 2. Respiratory chain 3. Oxidative phosphorylation and its mechanisms.	T20
32-35	Lipid Metabolism	1. Hydrolysis and transport of fats 2. β -Oxidation 3. Oxidation of Unsaturated Fatty acids 4. Formation of Ketone bodies 5. Biosynthesis of Fatty acids	T21
36-38	Amino acid and protein metabolism	1. Catabolism of Amino acids 2. Assimilation of Ammonia 3. Urea cycle and formation of Uric acid	T23
39-40	Nucleic acid metabolism	1. Purine biosynthesis 2. Pyrimidine biosynthesis 3. Salvage pathway	T23

5.Evaluation Scheme:

Evaluation Component	Duration	Weightage (%)	Date & Time	Nature of Component
Midsem	90 min	30	18/10/2021 9:00-10:30AM	Closed Book
Assignments/Quizzes etc. (continuation evaluation)		35	Announced in class	Open Book
Comprehensive	2 hours	35	11/12/2021 FN	Open Book

6.Chamber Consultation Hour: Will be announced in the Class.

7.Notices: All notices, concerning the course will be displayed on CMS.

8.Make-up Policy: Prior permission of the instructor-in-Charge is necessary for any make-up. No make-ups for continuous evaluation will be granted.

9.Academic Honesty and Integrity Policy: Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.