BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI, HYDERABAD CAMPUS
FIRST SEMESTER 2020-2021
Course Handout (Part-II)

Date : 17/08/2020

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 **: RUCHI JAIN DEY**
Instructor(s) **: Ruchi Jain Dey (L) and Sumana Choudhury (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
[Text book is available for purchase from various web portals such as amazon in paperback or kindle version]

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.
Online Resources: Useful e-resources, reading material, lecture slides and video recordings will be posted on CMS.

4 Course Plan:

Lec. No.	Topic	Learning Objective	Reference to Text /Ref. Books
1	Cellular Organization	1. Cellular organization, Spontaneity in biochemical reactions	T1, T4, R1
2-12	Structure and function of Biomolecules	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
Test 1 [12.9.20; During class hour]			
13-18	Enzymes	1. Classification	T6, T7

		2. Enzyme kinetics and Mechanism of action 3. Enzyme inhibitors and regulators 4. Allosteric enzymes 5. Isoenzymes 6. Vitamins and coenzymes	
19-20	Biochemical Energetics	1. Concept of Free Energy 2. Energy Rich Compounds 3. Coupling Reactions 4. Oxidation-Reduction	R2(13), T15, Lecture Notes
Test 2 [10.10.20; During class hour]			
21-27	Carbohydrate Metabolism	1. Glycolysis 2. Gluconeogenesis 3. Regulation of Glycolysis 4. TCA cycle 5. Glyoxylic acid cycle 6. Glycogen breakdown	T17, T18, T19,
28-30	Biological Oxidations	1. Components involved in ETC 2. Respiratory chain 3. Oxidative phosphorylation and its mechanisms.	T20
31-35	Lipid Metabolism	1. Hydrolysis and transport of fats 2. Beta -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
Test 3 [12.11.20; During class hour]			
39-41	Nucleic acid metabolism	1. Purine biosynthesis 2. Pyrimidine biosynthesis 3. Salvage pathway	T23
42-43	Photosynthesis	1. Introduction 2. Path of Carbon - Calvin cycle 3. C4 pathway	T22

5. Evaluation Scheme:

Evaluation Component	Duration	Weightage# (%)	Date & Time	Remarks
Test 1	30 min	15%	12.09.20* During class hour	Open Book

Test 2	30 min	15%	10.10.20* During Class hour	Open Book
Test 3	30 min	15%	12.11.20* During Class hour	Open Book
a. Take home assignments b. Surprise quizzes (8-10)	Variable	10% 20%	During lecture or tutorial hour	Open Book
Comprehensive	2 hours	25%	To be announced	Open Book
*** Tentative dates of tests.** **# Weightage can be calculated based on total Marks: 200M**				

6. Consultation Hour: Please email your queries or doubts to the lecture (ruchij80@hyderabad.bits-pilani.ac.in) with cc to tutorial instructor (p20190001@hyderabad.bits-pilani.ac.in) by email. To get the most benefit of online lectures and tutorials, students are expected to pro-actively and regularly go through the study material, lecture slides and assignments posted on CMS and resolve doubts during the upcoming tutorial hour.

7. Notices: All notices, concerning the course will be displayed on CMS. Google Meet Link for lecture and tutorial will be shared via CMS.

8. Make-up Policy: No make-ups will be provided for evaluation components conducted as part of regular assessment during lecture or tutorial hour unless it is a genuine case of medical emergency or hospitalization. Prior intimation/ permission is essential along with necessary documentary proof for the same.

9. **Computers, internet and textbooks:** It is expected that each student registered in a course in First Semester 2020-2021 shall acquire a computer or laptop with the desired hardware, software along with high-speed broadband internet access and a web camera. Streaming of student videos is essential during online evaluations. Students are also expected to purchase their text book.

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.