INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR

1. **Name of the Academic Unit:** Bioscience and Biotechnology

2. **Subject Name:** Biochemistry Lab **L-T-P: 0-0-3** **Credits: 2**
3. **Pre-requisites:** Science of Living Systems
4. **Compulsory or Elective:** Compulsory for BSBT students
5. **Level of the subject:** UG
6. **Syllabus and reference books:**

Syllabus:

The biochemistry lab provides the students an opportunity to have a hand on training on carbohydrate, protein, fatty acid estimation. Carry out enzyme kinetic reactions and measure velocity of a reaction. The students get exposed to working in groups for a common cause and to handle analytical instruments properly and with care thus developing a sense of accountability which is crucial if they stay in the field of research and development in future. The experiments that have been chosen for this curriculum allow them to gain a theoretical knowledge as well as its practical application in term of diagnostics. Overall, this course would make them well prepared for their future endeavors in their chosen research field and allied careers.

Reference Books:

1. Essentials Of Practical Biochemistry by Gupta Prem Prakash
2. Practical Biochemistry: Principles and Techniques by John M Walker, Keith Wilson, John Walker
3. Wilson And Walkers Principles and Techniques Of Biochemistry And Molecular Biology by Hofmann A
4. An Introduction to Practical Biochemistry by David Plummer

7. Lecture-wise break-up:

Sl. No.	Topic	No. of hours
1.	Quantitative analysis of amino acids	3
2.	Thin layer chromatography for qualitative analysis of amino acids	3
3.	Estimation of proteins by various methods and their comparison	3
4.	Estimation of total sugar in a sample	3
5.	Estimation of reducing sugar in a biological sample	3
6.	Determination of pI values of amino acids through pH titration	3
7.	Estimation of ascorbic acid	3
8.	Separation of polar and non-polar lipids	3
9.	Separation of phospholipids from polar lipid fraction	3
10.	Isolation and estimation of liver glycogen	3
11.	Studying effect of time on enzyme reaction	3
12.	Determination of K_m and V_{max} of enzyme-substrate reaction	3
	Total number of hours	**36**