



# BIOCHEMISTRY

**PROF. SWAGATA DASGUPTA**

Department of Chemistry  
IIT Kharagpur

**TYPE OF COURSE** : Rerun | Core | UG/PG

**COURSE DURATION** : 12 weeks (24 Jan' 22 - 15 Apr' 22)

**EXAM DATE** : 24 Apr 2022

**PRE-REQUISITES** : Basic concepts in Chemistry and Biology

**INTENDED AUDIENCE** : Core course BSc/MSc/MS/PhD

**COURSE OUTLINE :**

This course is an introductory course that will focus on basic concepts in biochemistry. The course deals with an understanding of biological macromolecules: proteins, carbohydrates, lipids, and nucleic acids. The structure and functional roles of the macromolecules will be studied in addition to fundamentals of enzyme chemistry: kinetics, mechanisms, inhibition, structure and mechanism. The course will also touch upon the basics of membrane transport and bioenergetic principles. After completion of the course, the students should be able to understand the chemical properties and three-dimensional structure of these biological macromolecules in relationship to their biological function.

**ABOUT INSTRUCTOR :**

Prof. Dasgupta is a completed her B.Sc. (Hons) in Chemistry from Presidency College, Kolkata. She obtained her M.Sc. from IIT Kanpur and Ph.D. from RPI, USA. She is the recipient CRSI (Chemical research Society of India) Bronze medal (2016) and the Darshan Ranganathan Memorial Lecture Award of CRSI (2013). She was elected Fellow of the West Bengal Academy of Science and Technology (2014). Her teaching contributions range from classroom teaching, web-course development, introduction of new courses and teaching laboratories, development of curriculum and initiation of research in a new area in the department.

**COURSE PLAN :**

**Week 1:** Amino Acids

**Week 2:** Protein Structure

**Week 3:** Protein Structure (continued)

**Week 4:** Enzymes

**Week 5:** Enzymes(continued)

**Week 6:** Enzyme mechanisms

**Week 7:** Lipids and Membranes

**Week 8:** Nucleic acids

**Week 9:** Vitamins and Coenzymes

**Week 10:** Carbohydrates

**Week 11:** Bioenergetics

**Week 12:** Metabolism