



BIOPHYSICAL CHEMISTRY

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PRE - REQUISITES : Basic Course in Physical Chemistry

INDUSTRIES APPLICABLE TO : Post-Graduate Level and Above

COURSE OUTLINE

This introductory course in biophysical chemistry touches on some of the fundamentals of this field. Starting from basic elements in protein structure, the course covers other aspects like forces involved in protein folding, protein folding energy landscape, mechanisms of protein folding, mixing and relaxation techniques commonly used to study fast protein folding, and finally winds up with discussion on some spectroscopic tools (Absorption, Fluorescence and IR) that are very popular in the field of proteins.

ABOUT INSTRUCTOR

Prof. Pramit K Chowdhury works on protein folding and dynamics using a range of spectroscopic techniques.

COURSE PLAN

Week 1: Introduction to Protein Structure (Lectures 1 and 2),

Secondary and Tertiary Structure of Proteins (Lectures 3, 4 and 5)

Week 2: Forces in Protein Folding 1 (Lectures 6, 7 and 8)

Week 3: Forces in Protein Folding 2 (Lectures 9, 10 and 11)

Week 4: Forces in Protein Folding 3 (Lectures 12, 13 and 14-part)

Protein Denaturation 2 (Lectures 17, 18 and 19-part)

Week 5: Protein Denaturation 1 (Lectures 14, 15 and 16)

Week 6: Protein Folding Pathways (Lectures 19 and 20)

Diffusion 1 (Lectures 21, 22 and 23)

Week 7: Diffusion 2 (Lectures 24, 25 and 26-part)

Electrochemical Potential (Lectures 26, and 27-part)

Week 8: Nucleation Mechanism (Lectures 27 and 28)

Mutational Analyses (Lectures 28, 29, 30 and 31-part)

Week 9: Protein Folding Kinetics 1 – Rapid Mixing (Lectures 31, 32, and 33-part)

Protein Folding Kinetics 2 – Relaxation Techniques (Lectures 33, and 34)

Week 10: Experimental Tools 1 (Lectures 35, 36, 37 and 38-part)

Week 11: Experimental Tools 2 (Lectures 38, 39, and 40)

Week 12: Experimental Tools 3 (Lectures 41 and 42)