

INTRODUCTION TO BIOCHEMISTRY

Instructor: Luis Gallegos

Meeting Time: Sundays 10AM – 11:30 AM

Prerequisites: AP/IB Chemistry or equivalent.

Course Overview:

In this course, we will cover: the fundamentals of the chemical properties of cells; amino acids, structure and function of proteins; enzymes, catalysis, inhibition and enzyme kinetics; chemical mechanisms and transformations, redox cofactors; fundamentals of metabolism; chemistry of sugars and the glycolytic pathway; TCA Cycle and the electron transport chain; oxidative phosphorylation and ATP synthesis; applications of biochemistry.

Homework:

There will be weekly **optional** problem sets (PSETs) assigned each week (6-7 total). I will not be collecting the PSETs. They will be available for pick-up during lecture and will also be uploaded on the site afterwards. Solution keys will be available a few days after lecture. Though they are optional, I strongly encourage everyone to attempt them or at least have a look at the solution key. They include many real-life applications of what we are learning in class, and offer a nice solidified review of the material.

Exams:

Like the homework, there will be an optional midterm and final exam handed out after the third and eighth lecture, respectively (which I will also not collect). They provide a good review of the material covered and are a good source to gauge your understanding.

Misc.:

This class is designed to mimic what a college-level biochemistry class might be like. As such it might be quite challenging at times. Don't feel bad! Please ask questions if there is something that is unclear. This class should provide you with a good understanding of basic biochemistry, but it's also meant to be fun!

Syllabus

Lecture #	Date	Topic	Notes
1	7/7	Introduction, course overview, water: the solvent of life, amino acids.	
2	7/14	Protein Structure: Primary, secondary, tertiary and quaternary structure. Intro to enzymes and catalysis	
3	7/21	Enzymes cont., enzyme kinetics, mechanisms, inhibition.	
4	7/28	Introduction to organic chemistry, redox cofactors	
5	8/4	Introduction to metabolism, sugar chemistry, glycolysis	
6	8/11	Glycolysis cont., TCA cycle, electron transport chain	
7	8/18	ATP synthase, biochemical applications, food!	