

Principles of Biochemistry (CHEM 5334) – Fall 2014

Meeting Location: CHEM 234

Meeting Time: Tues Thurs 8:00–9:20 AM

Website: <http://courses.ttu.edu/ppare/>

Office Hours: Tues Thurs 9:30-10:30 AM

Textbook: *Essential Biochemistry* 3rd Ed; Pratt & Cornely; Wiley Press

Professor: Dr. PW Paré

E-mail: Paul.Pare@TTU.edu

Phone: (806) 834-0461

Office: Chemistry 413B

Course: This is a one-semester course covering fundamentals of biochemistry. It is highly recommended that students have completed 2 semesters of organic chemistry and 1 semester of biology before embarking into this course. The first day of class is Tues. Aug. 26th; the drop deadline is Mon Oct. 27th; and the last day of class is Tues. Dec. 2nd.

Learning Outcomes: The fully successful student will know the structure and function of biological molecules including water, amino acids, lipids, and nucleic acids; the role of several model proteins including myosin, actin, keratin, collagen, myoglobin, hemoglobin and chymotrypsin. The student will understand the role of phospholipids as structural elements in biological membranes and properties of proteins associated with membranes; be familiar with the chemical principles involved in the assembly, from simpler precursors, of biological macromolecules (*e.g.* polysaccharides, DNA and proteins); understand chemical principles involved in sequencing DNA and proteins; structure, function and transport-across biological membranes; and biochemical reactions of primary metabolism including glycolysis, citric acid cycle & oxidative phosphorylation. The student will understand the mathematical principles used to analyze enzyme kinetics and use enzyme kinetics to examine catalytic efficiency, enzyme-substrate affinity and mechanisms of enzyme inhibition.

Student Reports and Exams: Select a current topic being examined in science and clarify what research has been answered or not been clarified. Your topic might center around evidence supporting/against evolution, risks and/or benefits of genetically modified crops (*e.g.* tomato/rice), use of antibiotics in agriculture, health risks/benefits of immunization, cause/prevention of insect resistant crops or insecticides, use of gene screening in medicine. Exams will include material covered in the class lectures and textbook readings. A portion of each exam will be based on assigned textbook homework. There will be three in-class exams on Sept 23rd, Oct 21st and Nov 18th. After finishing each exam individually, students will have the opportunity to work in pre-assigned teams to re-take the exam as a group. Test grades will be based on a combination of the individual and team scores. Please mark your calendar in advance since make-up exams will not be given.

Grades: Each in-class exam and the student report/oral presentation will count 25% towards the final grade. Letter grades will be assigned based on the standard ten point spread for each grade. The grading scale may be adjusted slightly at the instructor's discretion.

Academic Honesty: It is the aim of the faculty of Texas Tech to foster a spirit of honesty and integrity. Any attempts by a student to present work not honestly performed is regarded as a grave offense and renders the offenders liable to serious consequences, possibly suspension.

Special Conditions: Any student who, because of a disability, may require special arrangements in order to meet course requirements should contact the instructor at as soon as possible to request necessary accommodations. Students should present appropriate verification from Student Disability Services (335 West Hall or 742-2405). No requirement exists that accommodations be made prior to completion of this university process. A student who intends to observe a religious holy day should make that intention known to the instructor during the first class; the student who requires missing a test in observance of the holy day will be given an alternative date to sit the exam.