CHEM 3175: Biophysical Chemistry Laboratory
Fall 2015

Instructor: Brad S. Pierce
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Office Hours: MW 10 -11:45 am, or by appointment
Time and Place of Class Meetings: W, Th 1pm CPB 211

Teaching Assistants:

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Description of Course Content. An introduction to the experimental procedures, interpretation, and development of physical chemistry concepts relevant to biological systems. Topics include solution thermodynamics, enzyme kinetics, magnetic and optical spectroscopy, equations of state, and chemical equilibrium.

Student Learning Outcomes. Upon successful completion of this course students should be able to effectively apply physical, theoretical, and mathematical concepts to further their understanding of biological chemistry. It is expected that students apply these theoretical concepts to solve '*real-world*' problems relevant to biophysics. Since course examinations are designed to strengthen comprehension by independent thinking and problem solving, it is encouraged that students to seek outside reference materials from the library and scientific literature.

Lab Manual will be provided

Supplemental Texts.

Ignacio Tinoco, Jr.; Kenneth Sauer; James Wang; "*Physical Chemistry: Principles and applications in Biological Sciences*"; (4th); Prentice-Hall, NJ

Charles R. Cantor and Paul R. Schimmel; "Biophysical Chemistry Part II: Techniques for the study of biological structure and function";W.H. Freeman; San Francisco, **1980**

MAJOR ASSIGMENTS

Lab Reports. All experiments will be turned in to the TA at the beginning of the lab period on the designated due date. Late lab reports will receive a penalty of 5 pts for every day past the due date. NOTE: Labs turned in more that 5-days late will receive 0 points. Regardless, it is still necessary to turn in the lab report in order to complete the course. Experiments will be carried out in groups of 2 – 3 depending on class size. Each student must write his/her own lab report. **Plagiarism of ANY kind (lab partner, website, literature, or previous lab reports) will be considered an act of academic dishonesty, and will result in immediate failure of of the course**. Lab reports will be written in the format of a *Journal of the American Chemical Society* (*J. Am Chem. Soc.*) *Communication*. Templates (MS Word, PC/Mac) for this format are available for download from the ACS website,
http://pubs.acs.org/page/jacsat/submission/jacsat_templates.html

Lab reports must include the following sections; ABSTRACT, EXPERIMENTAL, RESULTS, DISCUSSION, and REFERENCES. If desired, RESUTS and DISCUSSION can be combined into a single section. For additional information on formatting and how to cite literature consult the ACS Style Guide or the author guidelines provided for JACS Communications. The lab report should **CONCISELY** discuss the purpose of the experiment and its results and potential sources of error. Any figures provided should have the axis's correctly labeled and theoretical fits where necessary. Additionally, sample calculations for all results should contain appropriate significant figures, SI units, and uncertainties. Whenever possible, experimental results should be compared to theoretical calculations and/or values reported in the primary literature. NOTE: Primary literature refers to data published in peer reviewed journals (*Biochemistry*, *Journal of Biological Chemistry*, *Journal of the American Chemical Society*, *Science*, *Nature*, etc). **DO NOT CITE WIKIPEDIA** or any other website obtained from a Google search!!!

Notebooks. Each student will maintain a bound, composition style notebook throughout the semester. All calculations, procedures, weights, measurements, observations, etc should be written in the notebook in sufficient detail that anyone could reproduce the experiment using only the notebook as a guide. Most importantly, it is the responsibility of each student to keep their notebook current at all times. Notebooks will be collected at **RANDOM** intervals by either the TA or the instructor to check completeness and assign points.

Poster presentation. After completing every lab report, each group will jointly prepare and defend a poster describing one of the (5) labs performed in this lab. Each group should discuss the selected experiment before starting to prevent potential overlap with other groups. Grades will be assigned on clarity, aesthetics of the poster, and the ability of all group members to intelligently present their experiment.

2015 Course Schedule. (*See 2015 Lab manual for a detailed schedule*)

As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course. –Brad S. Pierce

Grade Assignment.

Lab Reports (5)	(5 x 50 pts.)	250 pts.
Notebook		50 pts.
Poster presentation		50 pts.
Total		350 pts.

Students are expected to keep track of their performance throughout the semester and seek guidance from available sources (including the instructor) if their performance drops below satisfactory levels.

Attendance. Attendance is not an option. All experiments must be completed and lab reports turned in to receive a final grade in this course. No experiments can be omitted.

Mandatory Online Safety Training

1. Access http://www.uta.edu/training
2. Log into the training utilizing your network log-on ID and password (i.e., what you use to access email). If you do not know your NetID or need to reset your password, visit http://oit.uta.edu/cs/accounts/student/netid/netid.html.
3. The available courses for completion will be listed. You will need to complete the course entitled "Student Lab Safety Training – Wet." You will not need to print anything to show to your instructor.

Required Lab Attire. READ THIS INFORMATION VERY CAREFULLY!!! You will be exposed to hazardous chemicals in chemistry lab. Certain personal protective equipment is necessary to protect your body. You will not be allowed to attend lab if you are in violation of the following rules. If you are not dressed appropriately, you will need to leave the lab. *All missed lab work will count as zero.*

1. Safety glasses, gloves, and aprons are provided and are required at all times.
2. Closed-toe shoes are required at all times.
3. Long pants are highly recommended.
4. No musical or other entertainment devices may be used in chemistry lab at any time.
5. Cell phones are to be turned **OFF** during the lab. **NO EXCEPTIONS**.

OTHER REQUIREMENTS

Drop Policy. Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance**. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (http://wweb.uta.edu/ses/fao).

Americans with Disabilities Act. The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the *Americans with Disabilities Act (ADA)*. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

Academic Integrity. Academic dishonesty of **ANY** kind will not be tolerated. Without exception, **ALL** offenses will result in immediate course failure and referral to the UT Arlington Board of Student Affairs for disciplinary action. All students enrolled in this course are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

Student Support Services. UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at www.uta.edu/resources.

Electronic Communication. UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at http://www.uta.edu/oit/cs/email/mavmail.php.

Student Feedback Survey. At the end of each term, students enrolled in classes categorized as lecture, seminar, or laboratory shall be directed to complete a Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit http://www.uta.edu/sfs.