CHEM 3275-BIOCHEMISTRY TECHNIQUES Spring 2016 Syllabus

Instructors:

Dr. Rachell Booth (<u>rbooth@txstate.edu</u>) CENT 401C Dr. Karen Lewis (<u>KAL137@txstate.edu</u>) CENT 406A

Teaching Assistants:

Chance Berman (<u>cb1540@txstate.edu</u>)- Tuesday AM and Thursday AM sections Collin Wolfe (<u>cfw14@txstate.edu</u>)-Tuesday PM section Lance English (<u>LE1028@txstate.edu</u>)- Wednesday AM section Jose Reyes (j_r249@txstate.edu)- Wednesday PM section

Office Hours:

Office hours for Drs. Booth and Lewis will be announced in class and posted on TRACS.

Course Description:

This course introduces biochemistry majors to the fundamental laboratory techniques used in analytical and physical biochemistry. Weekly experiments will reinforce concepts presented in preand co-requisite courses and utilize modern instrumentation. Experimental design, interpretation of results, analysis, and reporting of experimental data will be emphasized. Prerequisite: CHEM 3375 with a C or better.

Course Objectives:

Upon completion of this course, students will be able to:

- 1. Calculate concentrations in different units and prepare aqueous solutions.
- 2. Recognize the causes of various experimental errors and know how to identify, evaluate, and minimize them.
- 3. Perform successful titrations and calculate/report the experimental results (i.e. concentrations, purities, etc) with appropriate number of significant figures.
- 4. Isolate a protein from a native source using standard purification techniques.
- 5. Analyze various biomolecules including detection, separation, and characterization techniques.
- 6. Operate instruments used in biochemical experiments.
- 7. Use the scientific literature to write an experimental protocol.
- 8. Properly document laboratory experiments in a notebook.
- 9. Relay scientific concepts and studies to other scientists and the local community.

Required Materials for EVERY lab session:

- 100 pg duplicate copy laboratory notebook (ex. ISBN 978-1930882744)
- Ball point pen for writing in lab notebook
- an external storage drive (USB type)
- three-ring binder

- closed-toe shoes
- long pants/jeans
- shirt with sleeves
- goggles/glasses

Course Grades:

Lecture Attendance (2 pts each)	50 pts
Lab Participation/Cooperation/Safety (4 pts each)	52 pts
Pre-Lab Notebook (10 pts each)	130 pts
In-Lab Notebook (15 pts each)	195 pts
Post-lab Notebook (25 pts each)	325 pts
Formal Lab Report	100 pts
Final Exam (lab practical final)	150 pts
TOTAL	1000 pts

Grading Scale:	1002-890	Α
-	889-790	В
	789-690	C
	689-590	D

Attendance and Tardiness: Lecture and lab attendance is *mandatory*.

- Students should arrive on time for lecture and laboratory sessions.
- Students will be awarded 2 points for each lecture session that they attend.
- Students that are not prepared to begin lab on time may not be able to complete the experiment and will lose credit on their in-lab grade.
- Absences will result in a zero on the in-lab grade.
- TAs are *not permitted* to extend the laboratory session times.
- There are no make-up labs. If you have any conflicts with your current lab section, you should immediately discuss them with Drs. Booth and Lewis <u>and</u> provide an explanation via email.

Lab Notebook:

- Your notebook is extremely important for success in this course and also as a reference in subsequent biochemistry laboratory courses. Each *student is required to maintain a duplicate page lab notebook that will contain all pre-lab assignments, sample calculations, procedures to be performed, results, and conclusions of the experiment (See "Laboratory Documentation Guidelines" for complete details).*
- The notebook for each lab experiment will be graded in three portions (i.e. pre-lab, in-lab, and post-lab) described in "Laboratory Documentation Guidelines":
- Pre-labs are due at the beginning of Monday lecture. It will remain in your notebook, be graded during the lecture, and returned at the end of lecture. If a student does *not* turn in a pre-lab write-up at the start of lecture, they will receive a zero AND be responsible for making an appointment with their TA <u>BEFORE</u> their lab section meets to have their pre-lab graded or they will not be allowed to begin the lab experiment on time.
- A duplicate copy of the pre- and in-lab will be turned in to your TA at the <u>end</u> of the lab session.
- A duplicate copy of the post-lab will be turned in to your TA at the <u>beginning</u> of the next lab session.

Assignment:

There is one additional assignment, a formal lab report covering experiments 3-6. Details will be discussed in lecture.

Resources:

- Students are encouraged to use supplementary materials provided on the course TRACS site as well as materials from CHEM 3380 Analytical Biochemistry and CHEM 3375 Principles of Biochemistry.
- The laboratory instructors will maintain a TRACS course website, which will be used for posting course information including experimental details throughout the semester and tracking grades. You can access TRACS at <u>https://tracs.txstate.edu/portal</u> or from the link on the Texas State homepage.
- Students should check their TX State email accounts <u>daily</u> for lab announcements (copies of each announcement will be posted on TRACS in the email archive).

Lab Glassware and Supplies:

- Individual students will be responsible for proper care of equipment and supplies, including micropipettes.
- Students (as partners) will be assigned a drawer at the beginning of the semester to hold personal items, spatulas, and stir bars. Students are responsible for returning their items to their assigned drawer and locking it at the end of each lab section. On several occasions specialized items will need to be checked out from the stockroom at the beginning of lab, clean up and return of these items to the Stockroom is the student's responsibility. Replacement of lost or damaged supplies, glassware, or equipment will be charged to both lab partners (i.e. 50% per partner).
- Micropipettes including a P-1000, P-200, and P-20 will be checked out from their TA at the beginning of each laboratory session. These must be returned at the end of each laboratory session. Failure to promptly return all pipettes will result in loss of Lab Participation/Cooperation/Safety points. If repair or replacement of pipettes is necessary due to misuse, the students responsible will be charged.

Honor Code:

- No collaboration is permitted on graded work (*i.e.*, tests, quizzes, results, etc.).
- Lab partners will perform the experiment and collect data together; however, collaborations are NOT allowed on discussions, conclusions, or written reports. This is not intended to discourage students from studying together or working together to prepare for lab or perform the experiments.
- This policy explicitly forbids copying or paraphrasing the work of others including a text, journal article, another student's lab report, or any site on the internet. Any outside sources must be clearly acknowledged. Acknowledgement of text (even a portion of a single sentence) that has been copied directly or closely paraphrased is still considered plagiarism. For a complete description of the Texas State Honor Code, please see the following website: http://www.txstate.edu/effective/upps/upps-07-10-01.html. If you need clarification, see Dr. Booth.
- Violation of the Texas State Honor Code will result in academic penalties at the instructors' discretion, up to and including failure in the course.

Professionalism and Respect:

The University and Drs. Booth and Lewis are committed to an educational community in which each individual is respected, appreciated, and valued. Class rosters are provided with the student's legal name. All requests to address you by an alternate name, pronunciation, and/or gender pronoun will be honored. Please advise us (either in person or by email) of this preference early in the semester.

Special Needs:

If you are a student with a disability who will require an accommodation(s) to participate in this course, please contact us as soon as possible. You will be asked to provide documentation from the Office of Disability Services. Failure to contact us in a timely manner may delay your accommodations.

Drop Policy:

The automatic "W" deadline is March 29, 2016 at 5:00 pm. After March 29, 2016, you may not drop any course. If you *withdraw* from the University, you may do so until April 21, 2016. A *withdrawal* requires going to zero credit hours for the current semester and is NOT the same as dropping a course.