

CHM 310

Biochemistry Lab

Fall 2014

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Office hours: Tues. 10-11 am, Thu. 1-3 pm,
Fri. 10 am-12 pm

Mon. 2-4 pm, Tue. 1:30-2:30 pm,
Wed. 12-1 pm, Fri. 1-2 pm

Lab location: Boehm Science Center, room 207 (2nd floor)

Lab times: Section 011 Monday, 2:00-4:50 pm (Instructor: Junker)
Section 213 Monday, 6:00-8:50 pm (Instructor: Levine)
Section 012 Tuesday, 2:00-4:50 pm (Instructor: Junker)

Textbook: *Biochemistry Laboratory: Modern Theory and Techniques* by Rodney Boyer, Benjamin Cummings, 2006, ISBN: 0-8053-4613-9.
(recommended, not required)

Notebook: A bound notebook is required. Spiral notebooks are acceptable. Entries must be made with ink (not pencil).

Co-requisite: CHM 310 Biochemistry I Lecture

Grading: The total final score for this laboratory will be comprised by:

average of all prelab assignments	3%
average notebook grade	7%
average of all worksheets	35%
average of all reports	55%

This total final score will count 18% towards your grade in Biochemistry.

Course structure:

Each section meets once a week for a 3 hour lab. All glassware and equipment must be cleaned and stored by the end of each laboratory session. Handouts with instructions for each lab will be distributed during a CHM 310 lecture during the preceding week. The handouts and assigned sections of the textbook must be read before coming to lab.

Course objectives: Upon successful completion of this course, a student will be able to:

- Use traditional and modern techniques of protein biochemistry
- Explain the concepts on which the laboratory experiments are based
- Write scientific reports, keep a laboratory notebook, and interpret laboratory data

Graded assignments:

1. Beginning with the 2nd lab, a written pre-lab is to be brought to each lab. The pre-lab includes an Introduction and Experimental section with a flowchart. The pre-lab format is described on page 7 (and Figure 1.4) in the Boyer textbook. For the experimental section, you only need to make a flow chart. The pre-lab can be hand-written. (Pre-labs 3% of grade)

2. Notebooks will be scored at the end of each lab session for header information (title, date, purpose), calculations, data, summary, and organization. (Notebooks 7% of grade)

3. For some labs, the report that will be handed in will be in the form of “worksheets” with answers to specific questions. These may be hand-written. (35% of grade)

4. For some labs, formal lab reports will be handed in. The format of the reports is described on pg. 7-8 of Boyer. THE REPORTS MUST BE TYPED. Due dates will be specified in the lab handouts (typically one week after the lab session). (55% of grade)

Important notes on grading:

1. Getting experiments to work is always great, but the main emphasis of this course is learning the basic principles of experimental biochemistry, including how to trouble-shoot when things don't “go right.” Consequently, the grading of all reports and worksheets will be heavily weighted by demonstrated comprehension, as well as clarity, organization, and thoughtfulness.

2. The worksheets and reports will also be graded for the quality of writing: organization and logical flow, grammar and punctuation, and spelling. Use complete sentences, proper paragraph construction, etc.

3. You will work in teams of 2-3 people for many of the experiments. However, **all handed-in written assignments are to be your own work only, without collaboration with other students.** You may come to me for help (office hours, pre-arranged times, or email) as often as you like.

4. Late assignments will be penalized 10% for the first week, 20% for the second week, and not accepted thereafter.

ADA Notice: Please contact me early in the semester if you need accommodation for a disability. You should also contact the KU Disability Services Office at 610-683-4108 or in Stratton 215.

Expected schedule of experiments:

<u>Dates</u>	<u>Topic</u>	<u>Graded assignment</u>
Aug. 26	Pipetting and solution preparation (Tuesday lab)	worksheet
Sept. 2 (Tues!)	Pipetting and solution preparation (Monday labs)	worksheet
Sept. 8, 9	Acid/base chemistry and pH	report
Sept. 15, 16	Assaying a phosphatase I	
Sept. 22, 23	Assaying a phosphatase II	report
Sept. 29, 30	Molecular graphics visualization of proteins	worksheet
Oct. 6, 7	Lysozyme I: preparation	worksheet
Oct. 13, 14	Linear regression (No Lab meeting)	worksheet
Oct. 20, 21	Lysozyme II: purification by chromatography	worksheet
Oct. 27, 28	Lysozyme III: Protein concentration assay	worksheet
Nov. 3, 4	Lysozyme IV: SDS-PAGE	report
Nov. 10, 11	Lysozyme V: enzyme kinetics- specific activity	worksheet
Nov. 17, 18	DNA purification and analysis	worksheet
Nov. 24, 25	PCR and DNA electrophoresis I	worksheet
Dec. 1, 2	PCR and DNA electrophoresis II	report