

Instructor: David Leaf and Craig Moyer

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Course Goals:

Learn standard molecular techniques used in basic research and biotechnology.

Laboratory manual and Xeroxing

This year we will use a new lab manual from Cold Spring Harbor entitled "At the Bench" . It has excellent advice for new scientists and is well worth the investment. Lab protocols will be posted as PDF files, and additional material will be available through xeroxing.

Words of Wisdom- "Experiments require engagement"

Contrary to popular opinion, most real experiments do not work the first time. The first laboratory skill is to learn how to focus on what you are doing and to anticipate what you will be doing next in a protocol.

ALWAYS READ YOUR LAB PROTOCOLS IN ADVANCE.

Laboratory Safety

Some chemicals are caustic, explosive, and/or carcinogenic. Please pay close attention when warnings are given about chemicals that we are using. Be considerate of your fellow labmates and don't endanger them needlessly. *You won't be allowed to stay in the lab if you act irresponsibly.*

Laboratory cleanliness

At the end of the laboratory session, you are responsible for cleaning up your own messes and glassware. Not negotiable.

Glove Usage

When handling a potentially harmful chemical you will need to wear gloves and have eye protection (safety glasses or goggles). Be sure to take off contaminated gloves before touching other instruments.

Never leave the laboratory with your gloves on .

Laboratory notebook

Maintaining a well organized laboratory notebooks is crucial for keeping track of experiments. If an experiment did not work, it may help you figure out what the problem is. If an experiment does work, a good notebook will provide enough information on the experiment to insure that you can repeat it a year from now.

In your lab notebook you should articulate the reasons why a given experiment is being conducted, (what is the question being asked with the experiment and what techniques are being employed). You should also include any relevant background information and provide experimental details from the lab protocol. **DO NOT SUBSTITUTE THE LAB HANDOUTS FOR A LAB NOTEBOOK.**

During the laboratory period, write down in your lab notebook what you actually did, (how it varied from the protocol).. the times at which you did things, and your observations .

After the experiment is complete, you should summarize whether the techniques worked accordingly, and any conclusion you can draw from the experiment. Also be sure to mention problems that were encountered and how those problems might be avoided in the future.

Calculators are forbidden

In the real world, you need to be comfortable with doing simple math in your head or on paper very quickly. Except in extreme circumstances, calculators will not be allowed to be used in the lab or on tests.

Letters of Recommendation

If you are interested in a letter of recommendation for graduate school, professional school or biotechnology, please let me know early in the quarter. Then I will be able to pay close attention to whether you show the appropriate consideration, curiosity and drive necessary for laboratory work. If I am not informed in advance, I may not be able to note enough particular details about you that helps to make a convincing letter of recommendation.

Grading

This course emphasizes proper laboratory techniques. Hence the grading will reflect your potential for laboratory work. *Brownie points* will reflect how good of a lab citizen you are: being on time, cleaning up, paying attention, and acting safely. Three quizzes will primarily address quantitative skills and understanding basic techniques. On the *molecular biology tests*, quantitative problems are stressed. Usually there are questions that in which you can use your laboratory notebook to see how well you record and organize relevant information for experiments. There are also questions in which you figure out why an experiment went wrong.

Points

Brownie points	20 points
3 Quizzes @ 20 points each	60 points
Take Home Final	<u>120</u> points
Total	200 points

Approximate Grading Scale

- A 180-200 points
- B 160-179 points
- C 140-159 points
- D 120-139 points
- F below 120