

Instructor: Michael C. Mossing, 452 Coulter, 915-5339, mmossing@olemiss.edu

Laboratory Schedule: 1 to 4 pm, MTuWTh 404 Coulter, (Most experiments require 1 or 2 days)

Lecture Schedule: Fri 1 - 1:50 pm, 200 Coulter (not every Friday - negotiable)

Text: Fundamental Laboratory Approaches to Biochemistry and Biotechnology

A.J. Ninfa and D. Ballou, (1998), Fitzgerald Science Press, Inc., Bethesda, MD

Teaching Assistants: Lei Wang and Yin Gu

URL: <http://www.olemiss.edu/depts/chemistry/courses/chem472/>

This laboratory course in biochemistry will provide hands-on instruction in basic biochemical techniques. We will focus on the production, purification, and analysis of proteins and nucleic acids. After a series of textbook experiments to get familiar with standard biochemical techniques, Each lab group will research, design and test one laboratory experiment. A detailed experimental protocol and model lab report will count for 20% of the grade for the course. The remaining 80% will be determined by 10 laboratory reports.

In addition, those enrolled in the graduate course Chemistry 578 will be required to perform an integrated long-term experiment of their choice throughout the course of the semester. Experiments might include, modification and cloning of a gene for protein production in *E. coli*, followed by expression and purification of the desired protein.

Required materials:

1. Textbook: Fundamental Laboratory Approaches for Biochemistry and Biotechnology by Alexander J. Ninfa and David P. Ballou
2. Bound laboratory notebook (from Scientific Notebook - available in the stockroom).
3. Safety Goggles.
4. PC-formatted floppy disk for data files, (or USB drive)

| Week | Date (Mon) | Topic | Chapter |
|------|------------|--|---------|
| 1* | 19-Jan-06 | Orientation meeting, Choose lab groups | 1 |
| 2 | 22-Jan-06 | PNP Spectroscopy | 2 |
| 3 | 29-Jan-06 | Protein and DNA quantitation | 3 |
| 4 | 05-Feb-06 | Chromatography | 4 |
| 5 | 12-Feb-06 | Protein Electrophoresis | 5 |
| 6 | 19-Feb-06 | Restriction and DNA Electrophoresis | 11 |
| 7 | 26-Feb-06 | PCR | 12 |
| 8 | 05-Mar-06 | Pick expt. topic, Literature review | |
| | 12-Mar-06 | Spring Break | |
| 9 | 19-Mar-06 | Plasmid DNA Purification | 11 |
| 10 | 26-Mar-06 | Protein Purification | 6 |
| 11 | 02-Apr-06 | Enzyme Kinetics | 8 |
| 12 | 09-Apr-06 | DNA Ligation and Transformation | 11 |
| 13 | 16-Apr-06 | New Experiments | |
| 14 | 23-Apr-06 | New Experiments | |
| 15 | 30-Apr-06 | Final Repo | |

* First lab meeting in Friday 19-Jan-2007 Room 200 Coulter Hall.