

BIOL 3110L Basic Laboratory Skills in Biology Spring 2011**Instructor**

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This class is designed to introduce you to the basic laboratory bench procedures you have read about, but with which you may have little or no direct experience. By the end of the semester, we hope that you will understand how to perform a given protocol and, perhaps more importantly, why it works.

Attendance

Attendance in this class is mandatory. Missing more than one class period a) places a significant burden upon your laboratory partner(s); b) prevents you from gaining applied experience, a major goal of this class and c) disrupts the continuity needed to complete multi-week experiments. Therefore, we allow one absence in this class, without an authorized excuse. Points will be deduction from your participation performance.

Grading and Exams

Grades are based upon your laboratory performance, exams and lab reports. There will be three examinations: one designed to test your “practical” skills and two subsequent exams designed test your knowledge of the theoretical foundation of each laboratory procedure. There will be no final exam; instead, you will submit four lab reports covering selected experiments during the course. The reports will be written in the style of a scientific paper. Make-up examinations may be scheduled at a mutually agreeable time. Finally, we will check your laboratory notebooks for accuracy. Each of these (applied performance, take-home exams, and laboratory notebook) will contribute to your grade as given below.

<u>Allocation of Points in Determining Your Grade:</u> <u>Your grade will be based on the following work,</u> <u>weighted as indicated:</u>	
1. Practical Exam	50 points (9%)
2. Midterm Exams (2@100 points)	200 points (36%)
3. Lab Report(s)	200 points (36%)
5. Lab Notebook	50 points (9%)
6. Participation/Performance (as judged by staff)	50 points (9%)
Total	550 points

Final grades will be awarded as follows: A (90%+), B (80 –89.99), C (70 –79.99), D (60-69.99) & F (<60%)

All academic work must meet the standards contained in “A Culture of Honesty.” Students are responsible for informing themselves about those standards before

performing any academic work.

Schedule

This course is intended to duplicate the experience of working in a research laboratory. Therefore, one cannot predict exactly when certain experiments will be performed, or when one must deviate from the experimental outline in order to complete a procedure and produce accurate results. Thus, you can expect a certain amount of deviation from the schedule outlined below. The course syllabus is a general plan for the course: deviations announced in class by the instructor may be necessary. **You must complete each set of experiments correctly before you can progress to the next step.** Your final grade in this class depends in large part upon your progress in this set of experiments.

Tentative Course Outline

Lab	Topic
I	Laboratory Calculations & Pipetting
II	Preparation of LB Media and Agar
III	Restriction Enzymes & Electrophoresis (repeat?)
IV	Plasmid Purification
V	PCR-based VNTR Human DNA Typing
VI	pGLO Transformation & Protein Purification (Hydrophobic Interaction Chromatography)
VII	Lab Report Project Restriction enzyme digestion of the pAMP & pKAN plasmids Ligation and transformation of recombinant plasmids Purification and restriction enzyme analysis of recombinant plasmids
VIII	ELISA (Enzyme-Linked ImmunoSorbant Assay)
IX	Protein Purification & Electrophoresis
X	Western Blot

Possible Additional Topics

Bioinformatics

Southern Blots

Isolation and Purification of Genomic DNA

The sequence of experiments will frequently have to be modified. The practical and two quizzes will be announced at least one week in advance.