

About Genetic Engineering

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Grading Criteria

You will be graded on the basis of three types of assignments: Exams, Lab Notebooks, and Lab Reports.

- Exams will be based on both *lecture* and *laboratory* material. In Genetic Engineering, there is really no difference between lecture and lab. The exams are designed to test your understanding of laboratory procedures and your ability to integrate practical techniques into a broader theoretical background.
- Your lab notebooks will be graded on how well you document your work and keep records. I will not be evaluating the work and the interpretations.
- The lab report is the vehicle by which you will describe the work, present the experimental results, and express your interpretation of the experiment.

Grading of Lab Notebooks

Lab notebooks will be graded according to three criteria:

5 points	Title Page and Table of Contents complete and up to date
5 points	Title and date for each entry
20 points	Data complete and up to date
10 points	Clear statements of purpose and conclusions for each experiment
20 points	Clarity of entries
60 points	Total

Lab notebooks will be collected **unannounced**, during **lecture**. There will be no grace period for late notebooks.

To satisfy the Lab Notebook portion of the Writing Requirement, you must earn a 70%

Grading of Lab Reports

Reports will be graded according to three criteria:

- Data (20 points): Did you obtain the correct experimental results? This is a purely technical grade and no assumption is made about whether or not you understood the project.
- Interpretation (20 points): How well did you analyze and understand each part of the project?
- Writing (20 points): Did you follow the appropriate format for the paper? How good was your use of grammar and language?

To satisfy the Lab Report portion of the Writing Requirement, you must earn a 70% on the writing portion of the lab report

Computing the Final Grade

There will be two midterm exams, each being worth 200 points. The final will serve as an additional, third midterm. It will not be comprehensive.

There will be four formal laboratory reports. The second report will contain about half of the work you do during the quarter and will be worth twice the number of points (120) as the other three (60 each). In addition to laboratory reports, there will be one problem set on plasmid mapping.

At the end of the quarter the total lab points will be adjusted to 30% as indicated:

Exams		
	Exam 1	200 points
	Exam 2	200 points
	Exam 3	200 points
Lab Reports		
	Introductory Project	60 points
	Plasmid Construction and Mapping	120 points
	Heterologous Gene Expression	60 points
	Southern Blot	40 points
Notebooks (2)		120 points
Problem Set		35 points
Total		1035 points

<u>Grade</u>	<u>Percent</u>	<u>Points</u>
A	90 – 100	932 - 1035
B	80 – 89	828 - 931
C	65 - 79	673 - 827
D	50 – 64	518 - 672
F	<50	<518

Lab Notebooks

Keeping accurate records is critical to the process of scientific discovery. The lab notebook is the place where you record what you have done and what you found out. In industry, the lab notebook is often vital to the patenting process, especially if there is litigation over priority. Many companies require that each day's work be signed by the investigator and a witness, and in many cases, notebooks are periodically collected and notarized. Each company publishes its own, very stringent set of regulations for lab notebooks. In this course you will keep your according to industrial standards. The rules for this course are based on those required by Eastman Kodak Company.

You are expected to have your notebooks with you at all times, whether in lab or lecture. Notebooks will be collected periodically without warning. Each notebook grade will be equivalent to one lab report.

1. Each notebook must have an accurate, up-to-date table of contents.
2. Each entry must have a title, a date, and a statement of purpose or intent.
3. Each entry must end with a conclusion and/or a statement of what must next be done.
4. Make entries at the time the work is performed. Do not write notes on scratch paper and make entries in your notebook later.
5. Make neat legible entries in blue or black ink
6. Use the pages in consecutive order. Do not leave any blank pages, or room for data or data analysis to be added later. All entries should be chronological at the time the data or analysis are completed. You may add a note at the end of one entry referring to the page of the data or of the analysis if there is intervening material.
7. For computer-generated records, photographs, or hand-drawn graphs, tape the material into your notebook. Make reference to the printout on the page. If it is necessary to put such inserts into the notebook, mount them so that they do not cover written information.
8. If data or samples from another source are entered, be sure to indicate the source clearly, including the name of the person from which they were obtained.
9. Record all steps in sufficient detail so that any person skilled in the field can repeat the work and obtain the indicated results.
10. A protocol that is used for the first time must be written out in full. If it is a standard protocol that you use on subsequent occasions, you may simply reference the first citing, subsequently giving only modifications or experimental details (e.g. particular strains, enzymes, etc.)
11. Use only standard abbreviations.

Format for Lab Reports

Lab reports are formal typed papers that describe your experiments and interpretations. They will be written according to the format of a journal research article:

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<u><i>Abstract:</i></u>	A brief statement of the problem and the results. No more than a short paragraph
<u><i>Introduction:</i></u>	An explanation of the problem and your plan for solving it. Do not give experimental protocols and results here. Just what you want to find out, and your basic approach to the problem. Introductions are relatively short. You do not have to spill your guts about your vast knowledge of recombinant DNA here. That will be best done on the exam.
<u><i>Methods and Materials:</i></u>	Present a description of the protocols, strains, DNA's etc. The <i>Methods and Materials</i> is like a cook-book that allows others to see exactly what your experimental conditions were. Do not give experimental design. For example, if you are talking about restriction digests, give the conditions under which you do a digest, but don't state what DNA's and what enzymes were used: that is experimental design, and it belongs in the <i>Results</i> section.
<u><i>Results:</i></u>	You should give a written explanation of the experiments, minus the protocols (given in <i>Methods and Materials</i>), with a careful description of figures and tables. Each figure and table must be numbered and captioned. You should only give enough of your conclusions to enable the reader to proceed logically from one experiment to the next.
<u><i>Discussion:</i></u>	Here you restate the problem and experiments, and provide a detailed discussion of your conclusions and recount how you arrived at them.

A Word About Plagiarism - Most scientific research is carried out through teamwork and the final result is a single report co-authored by all members of the team. Plagiarism, therefore is not an issue. In class, however, although the work is done in pairs and usually partners work together on the preparation and analysis of the data, each student must prepare his/her own lab report. It is acceptable to format the tables and figures jointly, but the main text must be written individually.

Laboratory Cleanup

Each student is responsible for helping to keep lab clean. Regardless of how you find the lab when you come in, you must swab your workplace down with detergent before and after lab, and you must empty the pipet disposal in the sink into the glass waste disposal. You must also clean up after yourself whenever you use the balance.

In addition to your personal responsibilities, you will be assigned to a clean-up crew according to the schedule below. Responsibilities of the clean-up crew are:

- Set out microcentrifuges at beginning of class and return them at the end

- Return balances to stockroom and tidy up balance areas
- Clean transilluminator
- Turn off water baths
- Empty any pipet containers that classmates did not empty
- Gather up any equipment or reagents that must be returned to instructor
- Help instructor put away any additional apparatus or reagents

Clean-up Crew assignments by seat location:

4	4
3	3
2	2
1	1

4	4
3	3
2	2
1	1

4	4
3	3
2	2
1	1

Front