

# Cell Biology Lab Syllabus

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**Office:** STC 353

**Office Hours:** Wednesdays and Thursdays 11a to 12p or by appointment

**Course Time:** Mondays at 1:00pm to 3:50pm or 4:00pm to 6:50pm

## Course Overview:

This laboratory course is designed to familiarize you with Cell and Molecular Biology Techniques that are used for investigating cellular structure and function.

**Student Learning Outcomes (SLO):** By the successful completion of this course students should be able to:

1. Perform immunofluorescent and cytochemical staining to observe various cell organelles
2. Isolate, quantitate proteins and measure enzyme kinetics
3. Assess cell viability and adhesion
4. Gain knowledge in various forms of scientific reporting.

## Required Text:

You are not required to purchase a published lab manual for this course. You are required to print and review the lab protocol from eCollege page of BSC 303 Cell Biology course before each lab session.

## Grading:

### Attendance & Participation: 10%

Attendance and participation is required. Absences will only be excused according to university guidelines. You will be asked to sign in at the start of each class; if you arrive late (More than 10 minutes after the start of class) you will lose attendance points. Labs, assignments, quizzes, and tests may not be made up if you are absent for them. If you are going to be absent because of an excused reason you must contact your instructor within 24 hours of your lab that you missed to schedule a time to make up your missed lab assignments.

### Quizzes: 20%

A quiz will be taken at the start of every lab over the previous lab's material the current day's lab material. These quizzes will be started promptly at the beginning of class and you will be allowed 10 minutes to complete the quiz. If you arrive late you will not be given extra time to complete the quiz.

### **Lab Report: 10%**

Lab reports must be written according to guidelines provided at the bottom of this syllabus. Plagiarism of any form or severity will result in a **“ZERO”**. There will be no “make up” grade or work in these cases. Lab reports are due within the first 5 minutes of lab. Reports turned in after the first 5 minutes but within the lab time will be accepted with a 25 point deduction. Reports will not be accepted after the scheduled lab time is over and will result in a **“ZERO”**. Lab reports must be turned in as a printed and stapled document. Emailed reports will not be accepted. 10 points may be deducted if you did not attend the lab or participate in the experiment for which the lab report covers.

### **Poster Presentation: 15%**

Your poster presentation grade will be composed of a group poster grade and an individual participation grade determined by your group members and your instructor. Your poster presentation grade will be determined based on the rubric provided on the first day of lab. Plagiarism of any form or severity will result in a **“ZERO”** for all group members and there will not be any “make up” assignment.

### **Midterm-20%**

### **Final-25%**

Midterm and final must be taken on the day they are administered. Make up tests will not be provided.

### **Laboratory and Safety Conduct:**

*Failure to comply with safety conduct will result in immediate expulsion from lab for the day and a zero will be given for the day's assignments.*

1. Food and drinks are NOT allowed in the lab.
2. Closed toe shoes that completely cover the foot must be worn at all times in lab.
3. Long jeans or pants must be worn. Shorts and capris are not allowed.
4. Safety goggles must be worn at all times in the lab.
5. Long hair must be tied back and kept away from flame.
6. Latex or Vinyl gloves must be worn while conducting experiments
7. Spills or broken glass must be reported immediately.
8. Biological wastes must be disposed of correctly.
9. Avoid breathing in or tasting chemicals – never pipette by mouth.
10. No unauthorized experiments are allowed.
11. Culture tubes are to be placed in a rack, never on the counter.
12. Electronic devices are not allowed in the lab. Cell phones should be placed on silent or be turned off.
13. Disruptive behavior will result in expulsion from lab.
14. Remember to use caution when handling glassware or sharp tools.
15. At the start of each lab the bench top must be wiped off with disinfectant.

16. You must wash your hands before and after working with organisms and before you leave the laboratory.
17. Before leaving lab each day you must: (*groups who do not complete these tasks before leaving will lose point from that day's attendance*)
  - a. Wash and clean all glassware and workbenches, making sure to remove any ink with alcohol
  - b. Put away all materials and glassware in their proper place
  - c. Throw away any paper towels, etc. you have used.
  - d. Place all materials for disposal in the appropriate containers.
  - e. Clean all bench tops with disinfectant.

## **Lab Schedule**

\*Schedule is subject to change. Each week a quiz will be given at the beginning of each lab covering the material presented from the previous lab and the methods for that day's lab.

**Aug. 25 - Week 1:** Safety Contracts & Syllabus Overview

**Sept. 1 - Week 2:** Labor Day - No Class

**Sept. 8 - Week 3:** Aseptic Techniques & Cell Culture

**Sept. 15 - Week 4:** Geimsa Staining & DNA Extraction

**Sept. 22 - Week 5:** Actin + Nuclear Staining

**Sept. 29 - Week 6:** Cell Organelle Staining

**Oct. 6 - Week 7:** Enzyme Analysis

**Oct. 13- Week 8:** MIDTERM

**Oct. 20 - Week 9:** Cell Viability Assay –**Enzyme Lab report due**

**Oct. 27 - Week 10:** Poster Prep

**Nov. 3 - Week 11:** Poster Presentation - **Final Poster Draft Due 11:59pm Thursday Oct. 30th**

**Nov. 10 - Week 12:** Cell Adhesion

**Nov. 17 - Week 13:** Lysing Cells & Protein Quantification

**Nov. 24 - Week 14:** Running a SDS PAGE gel

**Dec. 1 - Week 15:** FINAL EXAM (cumulative)

## Guidelines for Writing a Formal Lab Report

- Plagiarism of any form or severity will result in a 0. There will be no “make up” grade or work in these cases.
- Lab reports are due within the first 5 minutes of lab. Reports turned in after the first 5 minutes but within the lab time will be accepted with a 25 point deduction. Reports will not be accepted after the scheduled lab time. Lab reports must be turned in as a printed and stapled document. Emailed reports will not be accepted and will be considered late.
- 10 points may be deducted if you did not attend the lab or participate in the experiment for which the lab report covers.
- A few quick rules to follow
  - The report should be double spaced, size 12 font, Times New Roman or Arial.
  - The top right of each page should have your last name and page number in the header
  - Reports should never be written in first person (no “I,” “we,” or “our”)
  - Reports should be written in past tense for methods, materials and results. Present tense should be used in the discussion. Do not change tense in the same section.
  - Your thoughts should be clear and precise. You are not telling a story; you are writing a scientific report.
  - Slang and abbreviations such as “can’t” should not be used.
  - Abbreviations are appropriate for biological reports, but should be defined when used for the first time. (ex: “Fetal Bovine Serum (FBS)” could then be referred to as “FBS” for the rest of the paper)
  - Direct quotations should rarely be used in a scientific report. (paraphrase + cite instead)
  - Remember, just because you cite something does not mean it is not plagiarized! It should be in your own words and 100% different than the material you referenced.
- **Title Page**
  - Should have (in this order): Title of Paper, Your Name, Course and Lab Time, Date, University Name. Each piece of information should be on separate lines and centered in the middle of the page.
- **Abstract**
  - The abstract should reflect the summary of the whole paper and should not be longer than half of a page. Briefly state the purpose, methods, hypothesis, and results. One sentence for conclusion. The idea is to condense each section into one or two sentences. Ideally it should be between 100-200 words. No acronyms, no citations should be used.
- **Introduction**
  - The introduction should be about 3 paragraphs long (one half to one full page). It should clearly describe the background of the experiment and the reason or objective for the experiment. Make sure to explain any vocabulary words. You must include a hypothesis and reasoning for that hypothesis. Demonstrate your understanding of the material

covered. In order to confidently write an introduction you will need to refer to other textbooks, or articles. Do not forget in-text citations.

- **Materials and Methods**

- When writing a materials and methods section keep in mind that any individual should be able to recreate the experiment using your report and achieve the same results. You should not list materials in this section, they will be discussed when you cover the methods. This should be done in paragraph form and in your own words, never use bullets.

- **Results**

- In this section you will report your data. Graphs must have a title and have each axis labeled properly and include a legend. For lab reports in this class you may put multiple figures and/or tables on the same page to save paper. Tables and charts should be referred to as tables and graphs or other pictures should be referred to as figures. Each should be labeled and numbered (ex: i.e., Figure 1., Table 1.) so they may be discussed later. A short paragraph (one sentence for each figure/table) discussing observed trends should be included.

- **Discussion**

- The discussion section is used to explain your results and why they are significant. Conclusions will be presented in this section. You should discuss how your findings relate to the background information and other experiments. Include whether or not your hypothesis was supported and explain why or why not. It is also important to explain why certain observations occurred. For example, if the concentration of a substance decreased you should explain why. You will also need to refer to each figure/table and discuss it and what you concluded from it. Sources for error can be discussed if your results were not “ideal.” Although an experiment may not turn out as expected it should not be labeled as a failed experiment. The discussion should be ended with a short explanation of the importance of the experiment. This section should reflect your ability to think critically about the experiment you performed and the results you obtained.

- **References**

All sources are properly cited here, as well as, within the body of your paper. If you must cite your lab manual or handout as well as an addition 3 sources. MLA format is preferred.

Reference Example:

Williams, Eugene E. *Laboratory Manual for Cell Biology*. N.p.: Salisbury University, n.d. Web. 9 May 2013.<<http://www.salisbury.edu/biology/faculty/frana%20lab/Biol%20350%20Lab%20Manual.pdf>>.

**Academic Integrity:**

A Texas A&M Commerce student does not lie, cheat, steal, and does not tolerate those who do. A violation of the Texas A&M honor code and academic integrity involves any of the following offenses: cheating, fabrication, falsification, multiple submissions, plagiarism, and complicity in any of these offenses. The first instance of cheating will result in "ZERO" on the exam and/or on the assignment. The second instance of cheating will result in "ZERO" on the course. Cheating involves copying information from another student, non-allowable materials or source and plagiarism. Once again, violations of academic integrity will not be tolerated. This class will be conducted in strict observance of the Honor Code. Refer to your Student Handbook for details.

**Plagiarism:** Plagiarism is a criminal activity. You must cite all sources of information. Unreferenced copying of material, whether parts of sentences, whole sentences, paragraphs, or entire articles can result in a score of zero for your assignment and may result in further disciplinary action. Citing references doesn't mean you can copy sentences from original work, you are required to rewrite and paraphrase the sentences in your own words when you cite references.

**Conduct Policy:**

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. (See Student's GuideHandbook, Policies and Procedures, Conduct).

**Students with Disabilities/Reasonable Accommodation:** The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact: Office of Student Disability Resources and Services

Texas A&M University-Commerce

Gee Library, Room 132

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

[StudentDisabilityServices@tamuc.edu](mailto:StudentDisabilityServices@tamuc.edu)