

Introduction to Cell & Molecular Biology Lab (BIOL111L/151L)

Common Syllabus

Lab Overview

This is a foundation course for biology majors provides an introduction to cell and molecular biology. In the first semester of this introductory lab sequence we will explore important biological concepts and processes, but do so in a way that will help you to develop the scientific and critical thinking skills that form basis for the practice of science and use of scientific knowledge for understanding and evaluating contemporary topics in biology.

The lab curriculum is structured to gradually give you more practice doing various aspects of science, and culminates in a multi-week team project in which you will be engaged in the entire process of proposing, designing, conducting, writing, and presenting a scientific research project of your own design. In this way you will experience not only the power that science has to reveal the workings of the natural world, but also the dynamic nature of this knowledge.

During lab, you will be working in small teams on several experiments over the course of the semester. For most labs you will have individual responsibilities for preparing for the coming week's laboratory. These involve homework assignments, textbook readings, outside research or tutorial review. Your individual preparation for lab will be essential for the success of the whole team. Your final grade in this lab course will be based on a combination of your grades on both individual and team assignments. Successful completion of Biol 111/111L (or 151 & 151L) & Biol 112/112L (or 152 & 152L) fulfills the general education natural science requirements at the College of Charleston.

✚ **Team Grades** – These are grades given to each member of the team and are based on work that all members of the team collaborated on. Team grades are given for the Team Lab Notebook (TLN) completed for each lab, along with other work done by the team during lab. Please be aware that the lab instructor can adjust these grades based on each person's lab preparation, participation, and contribution as reflected by peer evaluations which you will complete each week. Those who participated/contributed will receive the full worth of the team's grade; those who did not contribute fully will only receive partial credit. **The guidelines for completing the weekly peer evaluations are in the *Student Forms Appendix* in your lab manual. Look over this carefully so that you understand your responsibilities to your teammates for lab.**

✚ **Individual Points** – These are grades given to each member of the team and are based on work that is to be done individually. Some of the labs require that each member of the team write the discussion (or conclusions) of the lab separately. Often there will be a quiz at the start of each lab. Quizzes will cover the previous lab, and reading/homework to be done in preparation for that day's lab. There is also pre-lab homework to be completed prior to most labs. Table 1 lays out the percent each assignment category counts toward your final lab grade. Note that the grade categories are color coded and correspond with the schedule of assignments (Table 2).

Table 1. Percent of final grade by grade category

Grade Category	Percent of Final Grade
Team Lab Notebooks & other team lab work (Team)	25%
Quizzes & other individual work (Individual)	25%
Homework (Individual)	15%
Final Independent Project Article (Individual)	25%
*Attendance, Participation & Progress (Individual)	10%

**This grade is subjective and based on your lab instructor's assessment of your individual contribution to your team, prompt and regular attendance to lab, effort, preparation for lab, and improvement over the course of the semester.*

Table 2. Schedule of Assignments – all work is graded on a 100 point scale.

Week	Lab	Team Earned Points	Individually Earned Points		Readings & Tutorials
			¹ Quizzes	² Homework	
Jan 22	Lab 1 – Termite Trails	-	-	-	Post-lab reading: - Textbook Chapter 1.6; Bioskills 1-3 (pgs. 18-26) - Lab Manual Appendices B & C
Jan 29	Lab 2 – Osmosis & Diffusion: Part 1	TLN Lab #2 – Part 1	Quiz over course syllabus	-Termite Trails Rewrite -Pre-lab #2 Osmosis Lab Worksheet Questions (lab manual pg. 11)	- Textbook– Chapter 6
Feb 5	Lab 2 – Osmosis & Diffusion: Part 2; Lab 3 - Exploring Plant Metabolism	Lab #2 TLN – Part 2 Lab #3 TLN	Inferential Statistics Quiz	Inferential Statistics Summary Table (lab manual pg. 24)	- Lab manual Appendix E: Inferential Statistics - OAKS Tutorials: Basics of Cellular Respiration; Basics of Photosynthesis; Using the LabQuest2 Data Loggers & CO ₂ Sensors - Pre-lab textbook: Chapter 9.1 & 10.1
Feb 12	Lab 4 (Week 1) – Exploring Metabolic Diversity: What Factors Effect Plant Productivity?	TLN Lab 4:Week 1 - Plant Metabolism Journal	-Quiz over Labs 2 & 3	-Lab #2 Osmosis – Conclusions (see lab manual pg. 26) -Plant Metabolism Worksheet Questions (lab manual pg. 33)	- Lab 4 OAKS Tutorial: Plant Metabolism & Productivity
Feb 19	Lab 4 (Week 2) – Exploring Metabolic Diversity: The Research Proposal Lab 5 (Week 1) – Fruit Fly Genetics	Team Proposal & Proposal Peer Evaluation	-	-	- Background biological research on the question you posed in Lab 4: Week 1.
Feb 26	Lab 4 (Week 3) – Exploring Metabolic Diversity: Data Collection Lab 5 (Week 2) – Fruit Fly Genetics	-	-	-	-
Mar 5	Lab 4 (Week 4) – Exploring Metabolic Diversity: Continuing Data Collection & Analysis Lab 5 (Week 3) – Fruit Fly Genetics	-	-	-	- Guide to Scientific Writing (Lab Manual Appendix F)
Mar 12	Lab 6 - Lost in Timbuktu	Lost in Timbuktu TLN (Lab 6)	-	-	- Lost in Timbuktu: Read The Scenario and Complete the Pedigree Analysis (pg. 78-79). Textbook Chapters: - Bioskills 6 (pg. 28-29) - Chapter 4.2; Ch. 14 - Lab 6 OAKS Tutorial: Gel Electrophoresis
Mar 19	Spring Break				
Mar 26	Lab 4 (Week 5) – Exploring Metabolic Diversity: Draft Article Peer Review Lab 5 (Weeks 4 & 5) – Fruit Fly Genetics	Draft article peer review & scribe summaries	- Quiz over Lab 6: Lost in Timbuktu	- Independent Projects Draft Article	-
Apr 2	Lab 5 (Week 6) – Fruit Fly; Lab 4 (Week 7) - Exploring Metabolic Diversity: Preparing for the Symposium	Fly Genetics TLN (Lab 5)	-	-	Homework Readings: - Bioskills 4 (pg. 26) - Chapter 14 - Chapter 16.1 & 16.2
Apr 9	Lab 7 – Genetics & Molecular Biology of Sickle Cell Anemia	Sickle Cell TLN (Lab 7)	-Quiz over Lab 5: Fruit Fly Genetics Lab	Pre-lab 7 Worksheet (lab manual pg. 95-96)	- Lab 7: Part 1 – Meeting the Affected Family (pg. 97-99) - Lab 7 OAKS Tutorial: Mutations - Chapters 16.2-4; 17
Apr 16	Student Project Oral Presentations	- Oral Presentation - Sickle Cell Letter (see lab manual pg. 113)	-Quiz over Lab 7: Sickle Cell Lab	Final Independent Project Article	-

¹Quizzes will be over concepts from the previous week's lab, and homework reading for that day's lab.

²Homework is listed on the week it is due.

Lab Grade Determination – Your final grade in lab will be determined using the grade distribution.

- A 93-100 %
- A- 90-92
- B+ 87-89
- B 83-86
- B- 80-82
- C+ 77-79
- C 73-76
- C- 70-72
- D+ 67-69
- D 63-67
- D- 60-62
- F Below 62

Lab Attendance is, of course, required! If you miss a lab for an excused reason (medical illness, family emergency, CofC athletics conflict), you must PROMPTLY arrange with your lab instructor to make up the lab in another lab section.

General guidelines for making up a missed lab:

- In the event that you miss a lab with a legitimate, documentable reason, you may bring documentation to the Absence Memo Office (<http://victimservices.cofc.edu/absence-memo/index.php>) located at 67 George Street (between Stern Center and Glebe Street). A representative from the Absence Memo Office will notify your lab instructor by email. Please note that undocumented absences will be considered unexcused.
- You should make every attempt to attend a lab section taught by your lab instructor during the same week.
- You may not attend another lab section without permission of your lab instructor!
- You will be working with another team in the makeup lab section you attend, but you should complete the Team Lab Notebook (TLN) on your own and turn it into your instructor so that you can receive a grade for the lab.
- Consult with your lab instructor for his or her makeup policy.

Unexcused absences will result in a 0 (zero) for that week's lab (TLN, quiz, assignments). Any unexcused absence will also have a significant impact on the attendance and participation part of your lab grade. **If you have more than one unexcused absence**, you will be dropped from the lab. **If you miss more than 2 labs, for any reason** (excused or unexcused) you will be dropped from the lab. Be aware that the lecture and lab are co-requisites. If you are dropped from the lab due to non-attendance, or withdraw, you will also be dropped from the lecture.

Honor Code and Academic Integrity

Plagiarism in this class – The structure of this class is probably going to be different from that of other science classes you have taken. In this class we will, to a large extent, be working in small teams, much like professionals do when they collaborate on projects. The collaborative work we do in this class is meant to encourage you to work together with your teammates to help each other learn. This will require that you share, justify and evaluate the ideas expressed among your teammates. So in short, you are allowed to work together on labs in this class. ***Working together means identifying knowledge your team needs to proceed, sharing research knowledge and resources, evaluating each other's ideas about methods, analysis and conclusions & providing constructive feedback to your teammates.*** However, for some assignments you will be asked to work on them individually. When you write for these assignments, the ideas you express will of course be a collection of those constructed by your team and supported by background research, but what you write should ultimately be written individually, by you, and in your own words. Any information, concepts, ideas that you acquire from outside research sources must be summarized/explained in your own words, and appropriately cited (both in a work cited section and parenthetically in the body of the paper). In short, this class will be structured to allow you to work together to form your ideas, but you must ultimately express these ideas in your own words! In fact, I hope you come to realize that the act of expressing and justifying your ideas IS LEARNING!

Therefore the following constitutes what is and is not plagiarism in this class

Plagiarism	NOT Plagiarism!
Copying ideas constructed by another member of your team, from the class, or from other students who have taken this class in the past.	Summarize the ideas expressed by team or class members in your own words. Use these ideas to justify your solutions, conclusions or recommendations.
Copying (essentially word for word) the ideas (information, findings, analysis, and conclusions) expressed in a research resource (article, web site, textbook)	Summarize the thoughts expressed in the research resource in your own words. Use these ideas to justify your solutions, conclusions or recommendations and cite the source.
Summarizing information or ideas expressed in a research resource (i.e. a research article or web site) without citing the source. <u>Without a citation, you are implying that the ideas are yours, when they are not!</u>	Cite your research using APA citation style formatting both parenthetically, and in a Works Cited section at the end of the paper. Citing your sources is <u>always</u> required, unless otherwise specified in the assignment guidelines!
Using, in whole or in part, papers written for other classes to write an assignment for this class, without obtaining prior permission from the instructor.	If you have written a paper for another class which relates to a project we are working on, talk with your instructor about what you can and can't use!
Quoting – Although not technically plagiarism, it is NOT acceptable in this class to present ideas, concepts, findings, as quoted text with a citation.	FIRST - explain information/ideas/concepts/findings that you get from research resources in your own words, and cite the source. Word for word quotes should ONLY be used in this class to support or drive home an idea that you have already constructed in your own words from research or your own findings.

Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when identified, are investigated. Each incident will be examined to determine the degree of deception involved.

Incidents where the instructor determines the student's actions are clearly related more to a misunderstanding will be handled by the instructor. A written intervention designed to help prevent the student from repeating the error will be given to the student. The intervention, submitted by form and signed by both the instructor and the student will be forwarded to the Dean of Students and placed in the student's file.

Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XF in the course, indicating failure of the course due to academic dishonesty. This grade will appear on the student's transcript for two years after which the student may petition for the X to be expunged. The student may also be placed on disciplinary probation, suspended (temporary removal) or expelled (permanent removal) from the College by the Honor Board.

Students should be aware that unauthorized collaboration--working together without permission-- is a form of cheating. Unless the instructor specifies that students can work together on an assignment and/or test, no collaboration is permitted. Other forms of cheating include possessing or using an unauthorized study aid (such as a PDA), copying from others' exams, fabricating data, and giving unauthorized assistance.

Students can find the complete Honor Code and all related processes in the *Student Handbook* at <http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php>