

**Biology 231: Fundamentals of Cell and Molecular Biology Laboratory
BLD 110**

Sections & Meeting Times:

011 Tues 11-1:50; **012** Tues 2-4:50; **013** Wed 1-3:50; **014** Thurs 8-10:50
015 Thurs 11-1:50; **016** Thurs 2-4:50; **017** Wed 10-12:50

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Office Hours: Tues & Thurs 2:00-3:30 p.m.

Course Description & Prerequisites: BIOL 231. Fundamentals of Cell and Molecular Biology Laboratory. 1-3-0.
Prereq: BIOL 111 and BIOL 112 Coreq: BIOL 230.
LCCN: CBIO 2131 / BIOL 230 & 231 equivalent to (LCCN: CBIO 2134).

Recommended Text: *Essential Cell Biology*, 5th Ed. Alberts et al., W. W. Norton & Company.

Laboratory protocols will be provided through Moodle at no cost to students.

Other Required Materials:

- ✓ UL's Moodle. Moodle.louisiana.edu. Download the Moodle app on your device to benefit from notifications.
- ✓ a non-spiral-bound notebook to use as a lab data book to record changes in laboratory protocol and to record data as it is collected
- ✓ a lab coat and a pair of safety glasses
- ✓ a non-graphing calculator capable of computing natural logarithms

Learning Objectives: By the end of this course, you should be able to:

1. Investigate characteristics of live cells by using various forms of light microscopy, collecting and analyzing quantitative data, and making conclusions based on the results.
2. Describe the components and associated functions of forms of digital microscopes and the procedures used to prepare appropriate specimens for their use.
3. Compare and contrast various forms of light microscopy.
4. Investigate characteristics of proteins by using procedures and equipment relevant to proteomics studies, collecting and analyzing quantitative data, and making conclusions based on the results.
5. Describe the components and associated functions of equipment and procedures used to prepare and analyze proteins.
6. Investigate student-derived polymorphic DNA by using procedures and equipment appropriate to genomic studies, collecting and analyzing quantitative data, and making conclusions based on the results.
7. Describe the components and associated functions of equipment and procedures used to prepare and analyze DNA.
8. Discuss both the strengths and limitations of equipment and procedures used in this lab to address scientific research questions.

Grading: The final lab percentage grade will be calculated by adding your scores received for: class participation (50 possible points), on 7 quizzes (70 possible points), and on the 2 exams (200 possible points) divided by 320 total points.

Course Grading scale: 90-100% = A, 80-89% = B, 70-79% = C, 60-69% = D; < 60% = F.

- ✓ **Participation** - participation points will be awarded for each lab class. Each class is worth 5 pts. Points are earned by exhibiting behavior outlined under Expectations below. **Participation points cannot be earned in the event of an absence.** In the case of a documented excused absence, the total possible points for participation will be reduced for that individual.
- ✓ **Quizzes** - Eight quizzes will be given each worth 10 points. Quizzes will contain questions related to content of the previous lab as well as the current lab. Quizzes will generally be given at the beginning of

lab and will be timed. You will not be given extra time if you are late. Your lowest quiz grade will be dropped.

- ✓ **Exams** - Two exams will be given each worth 100 points. Exam 1 will cover material from the first 5 labs and Exam 2 will cover material from the last 4 labs. Exams will generally be given at the beginning of lab and will be timed. You will not be given extra time if you are late.

Final laboratory grades are determined at the end of the semester and take into account differences in grading scales and styles between laboratory instructors. Final grades will be posted to Banner.

Make-up Exams: In case of an excused absence, you may take a make-up exam on the designated day determined by the instructor. To be considered for an excused absence, you must present an official document attesting to the reason for the absence to the instructor either before the absence occurs or upon the first day of returning to school.

Academic Honesty: All of the work on which you will be graded must be an original contribution or should be properly documented to indicate sources. Acts of academic dishonesty include giving, receiving, or using unauthorized aid on any academic work as well as plagiarism. Cheating, in the context of academic matters, is the term broadly used to describe all acts of dishonesty committed in taking tests or examinations and in preparing assignments. Furthermore, any student who provides unauthorized assistance in academic work is also guilty of cheating. Plagiarism is the use of unacknowledged materials in the preparation of assignments. In accordance with University policy, if the instructor determines that a student has committed academic dishonesty, a grade of zero on the exercise in question and the student's actions will be reported to the University. See the UL-Lafayette Academic Honesty Policy and definitions.

<https://catalog.louisiana.edu/content.php?catoid=12&navoid=3203#Academic%20Honesty>

Attendance: ATTENDANCE IS MANDATORY. Labs cannot be made-up. In the case of absence, a documented excuse (official University leave, doctor's/health clinic excuse, accident report, legal summons, or death in the immediate family) must be presented to the instructor immediately upon returning to class. If the student has two or more unexcused absences prior to the drop date, they are strongly encouraged to drop the course.

Expectations: As this course is in an academic setting, we will behave and communicate as professionals. As such, we will use language, grammar, spelling and etiquette appropriate to university work. You are expected to:

- ✓ be respectful to the instructor and to fellow students at all times.
- ✓ accept and abide by all sections of the Laboratory Safety Agreement (distributed during first lab meeting) and any supplemental laboratory safety instructions.
- ✓ be on time, take notes, and participate in relevant class discussions and group activities as instructed during the lab.
- ✓ stay in lab for the entire time. DO NOT leave lab early without permission of the instructor. Doing so will result in a participation grade of 0 for that class period, and would be considered an unexcused absence.
- ✓ **print and bring to each class the lab handouts** (will be available on Moodle).
- ✓ clean up, leave equipment in proper condition, and put all materials in the proper place before leaving the lab.
- ✓ all of the equipment in this laboratory is expensive and potentially dangerous if not used according to the specifications in the lab handouts. BE VERY CAREFUL and FOLLOW ALL DIRECTIONS. When in doubt, ask the instructor BEFORE proceeding.
- ✓ SILENCE CELL PHONES AND REMOVE HEADPHONES DURING LABS AND EXAMS!!!!
- ✓ abide by any seating arrangements during labs and/or exams.
- ✓

Anyone interfering with the educational process will be asked to leave the room.

Emergency and Evacuation Procedures: A map of this floor is posted near the elevator marking the evacuation route and Designated Rescue Area. This is an area where emergency service personnel will go first to look for individuals who need assistance in exiting the building. Students who may need assistance should identify themselves to the teaching faculty.

Disability Accommodations: Students needing academic accommodations for a disability must first be registered with the Office of Disability Services (ODS) to verify the disability and to establish eligibility for accommodations. Students may call 337-482-5252 or visit the ODS office in the Conference Center, room 126. Once registered, students should then schedule an appointment with the professor to make appropriate arrangements.

Lab Schedule: This schedule is tentative and is subject to change. Changes will be announced in class, on Moodle, or through email. Exam dates will not change unless the University closes unexpectedly. In that event, be prepared to take the exam on the day we resume class.

DATE	QUIZ	LAB EXERCISE
27-Aug		Lab 1: Introduction, Lab Safety & Investigation of live cells using digital video microscopy
3-Sep	Quiz 1	Lab 2: Investigation of food vacuole dynamics using epifluorescence microscopy
10-Sep	Quiz 2	Lab 3: Investigations in proteomics I: Protein extraction from muscle
17-Sep	Quiz 3	Lab 4: Investigations in proteomics II: Protein gel electrophoresis and Western blotting
24-Sep	Quiz 4	Lab 5: Investigations in proteomics III: Immunodetection of myosin light chains and determination of molecular mass
1-Oct		No Labs - Fall Break
8-Oct	Quiz 5	Wrap up and Review
15-Oct		Exam 1 (Labs 1-5)
22-Oct	No quiz	Lab 6: Protein quantitation using the Bradford assay
29-Oct	Quiz 6	Lab 7: Investigations of human DNA polymorphisms I: DNA extraction and amplification
5-Nov	Quiz 7	Lab 8: Investigations of human DNA polymorphisms II: Separation and visualization of PCR products
12-Nov	Quiz 8	Lab 9: Investigations of human DNA polymorphisms III: Analysis of PCR products
19-Nov		Wrap up and Review
26-Nov		No Labs - Thanksgiving Holiday
3-Dec		Exam 2 (Labs 6-9)