

Syllabus
BIBC 103: BIOCHEMICAL TECHNIQUES
Section D00
Fall Quarter 2021

Instructor:

Lara Soowal, Ph.D.

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Office Hours: Anytime I'm around the labs, or by appointment (I have a desk in 3306, so please find me there whenever you have a question.)

Support Staff: Joe Stagg

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IAs:

Nas (D01): nkhader@ucsd.edu

Will (D02): wschleimer@ucsd.edu

Lecture: MWF 12:00 PM - 12:50 PM Sequoyah 148 or zoom

Lab: W/F 8:00 AM - 11:50 AM; York 3306 (D01), 3406(D02).

What to bring to lab each day:

1. **double masks or KN95/N95 mask**
2. Lab Manual (2021 edition)
3. Lab Research Notebook with 100 numbered duplicate pages
4. Pen (must use ink for notebook)
5. lab coat
6. UV safety glasses
7. proper attire and shoes

Course Web Site:

We will be using Canvas for course information throughout the quarter. Please be sure that you are able to access this web site. Be sure to check it often. All lab course material will be accessed here, except for the lab manual.

Point cutoffs for grade assignments:

A+	990-1000	B+	890-899	C+	790-799	D	590-699
A	910-989	B	810-889	C	710-789	F	0-589
A-	900-909	B-	800-809	C-	700-709		

Important Dates

Week	Date	Experiment/Activity	Chapter
0	9/24	Enrollment and safety orientation	
1	9/29	Introduction to equipment, pipetting and dilution skills	Lab 1
	10/1	Introduction to SDS-PAGE Quiz 1	Lab 2
2	10/6	LDH 1: Initial purification of lactate dehydrogenase (LDH) from crude homogenate: centrifugation, ammonium sulfate precipitations	Lab 3
	10/8	LDH 2: Affinity chromatography	Lab 4
3	10/13	LDH 3: Size exclusion chromatography purification of LDH	Lab 5
	10/15	LDH 4: LDH Activity assays; Bradford protein assays	Lab 6
4	10/20	LDH 5: SDS-PAGE of LDH purification fractions Quiz 2	Lab 7
	10/22	MAPK 1: Sea urchin fertilization, prepare cell lysates	Lab 9A
	10/22	LDH purification table analysis due by 11:59 PM	
5	10/27	Exam 1 in lab	
	10/29	MAPK 2: SDS-PAGE and electroblotting	Lab 10
6	11/3	MAPK 4: MAPK Western blot — immunodetection	Lab 11
	11/5	MAPK 5: ELISA for phospholipase C activity	Lab 12
7	11/10	Bioinformatics 1: Investigation of an unknown melanoma gene Quiz 3	Lab 19 part A
	11/12	Veteran's Day holiday, no lab	
8	11/17	Bioinformatics 2: Modeling protein structure using PyMOL; select protein for PyMOL image project	Lab 19 parts B-D
	11/18	Sea urchin fertilization lab report due by 11:59 PM	
	11/19	FP 1: make competent cells, transform with plasmid for recombinant fluorescent protein; work on PyMOL image project	Lab 13 intro, parts A, B Lab 15
9	11/24	FP2: His-tag purification of FPs, spectroscopy to determine unknowns Quiz 4	Lab 16
	11/26	Thanksgiving holiday, no lab	
10	12/1	FP 5: SDS-PAGE of fluorescent proteins	Lab 17
	12/1	PyMOL protein image project due by 11:59 PM	
	12/3	Exam 2 in lab	

Course Structure

Activity	Point Value
LDH Purification: Lab notebook	35
LDH Purification: Purification table analysis	100
Sea Urchin Fertilization (MAPK Signaling): Lab notebook	30
Sea Urchin Fertilization (MAPK Signaling): Lab report	240
Bioinformatics: Lab manual questions	30
Bioinformatics: PyMOL protein image	40
Fluorescent Proteins: Lab notebook	30
Fluorescent Proteins: Identify unknowns	20
Lab Practical: Assemble and load SDS-PAGE gel	10
Quizzes: Four at 35 points each	140
Exam 1	100
Exam 2	225
Total	1000

Lab Quizzes and Exams

All quizzes and exams will be taken in person during the lab sessions. The purpose of the lab quizzes is to be sure that you are mastering the basic concepts behind the experiments as we go through the class. This includes understanding the purpose of the lab projects and how each experiment fits into this, the basic concept underlying the procedures, and simple mathematical and analytical skills based on what you have actually done in lab. The quiz and exam dates are on the lab schedule. Quizzes will be given at the beginning of lab, will take 15-30 minutes, and will consist of 5-7 questions. The topics that will be covered on each quiz will be posted in an announcement on Canvas on the Monday prior to the quiz.

The two exams are cumulative and will be problem solving-based. They may include some basic questions on the concepts we have covered, but will emphasize taking the information you have learned and extrapolating to solve problems you have not seen before.

Lab Attendance Policies

In-person attendance at each lab is mandatory. If you are exposed to COVID-19 or feel ill, however, stay home and contact the instructor by email. If you test positive for COVID-19 and must isolate, we will work to keep you in the class. Details on each day's lab experiments will be available in the lab manual. You are required to read the manual BEFORE coming to lab. Attendance will be taken at each lab session. If you are more than 10 minutes late to lab, or you leave lab before your group is done, you will be counted as absent for that day. Your attendance will be factored into your final grade. An unexcused absence will result in 15 points off. If you know that you need to miss a lab session, discuss this with the instructor (not the IA, they are not authorized to give you permission) to see if it will be possible to make up the lab session or excuse you from the lab with no consequences. Please bring this to the instructor's attention as soon as you know that it will be an issue. **Only the instructor can excuse an absence. Two unexcused absences will result in the student failing the course. Athletic competitions are not excused absences.**

Turning in Lab Report/HW

Lab report and data write-ups will be submitted electronically on Canvas. Lab reports are due before the end of the day (by 11:59 PM) on the due date. Late assignments will be deducted 10 points for each day late. Students

agree that by taking this course all required papers will be subject to submission for textual similarity review to Turnitin.com for the detection of plagiarism. All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of the Turnitin.com service is subject to the terms of use agreement posted on the Turnitin.com site.

Academic Integrity

Cheating will not be tolerated. The administrative policy on Academic Dishonesty outlined by this institution will be followed. Students caught cheating during an exam or quiz will be removed and given a “zero” for that exam or quiz. A report will also be filed with the Academic Integrity Coordinator. Cheating includes, but is not limited to, plagiarism, talking during tests, tampering with graded tests, or making use of forbidden materials during tests. Students will be permitted to bring only non-programmable calculators and writing implements to exams.

During laboratory sessions, student cooperation and collaboration is highly encouraged. This includes discussion of experimental data with fellow students during lab hours. After the laboratory session is over, however, you are required to work on your own. ***Each student must hand in an independently written and independently thought-out data analysis for each lab.*** If you are caught working with another student on your written assignments, both of you will receive a “zero” for that lab report, and you might be reported to the Academic Integrity Coordinator.

It is NOT acceptable to use any old lab reports to assist you in any way. If you happen to be in possession of old copies of lab reports for this class, it is best that you do not even look at them, since they could unintentionally influence the way that you write your own report. If we discover that you have used an old lab report in any way, you will automatically receive a “zero” for that lab report, and you might be reported to the Academic Integrity Coordinator.

While your lab reports and homeworks will be returned to you, you are NOT permitted to share them with anyone for any reason. If we find that you have shared your reports with anyone, you will be reported to the Academic Integrity Coordinator, even if you have already completed the class.

Make-up Exams

If a student is unable to take an exam, he/she must contact the instructor *as soon as possible*, and with as much advance notice as possible. If there is a valid reason, and solely at the discretion of the instructor, an oral exam or an alternate written exam will be administered.

Re-grading Exams

Exams will be available for you to review as soon as they are graded. You may NOT take the exams with you. Any exam that is not returned will receive a grade of zero. Exam keys will be available in lab on the day that exams are returned. Please review the key and check over your answers. If you feel that an error has been made in the grading of your exam, please write a note (on the exam or on an attached piece of paper) stating the discrepancy and it will be reviewed by the professor and/or the IA who graded that question. Exam three will be available for review during finals week. **UNLESS THERE IS A SIMPLE ADDITION ERROR, ALL REGRADES WILL BE DONE TO THE ENTIRE EXAM.**

Re-grading Lab Reports

All requests for re-grades of lab reports must be in writing. Attach a note or write directly on your lab report, and return it to your IA. The option of re-grades is solely at the discretion of the IA, and all re-grade decisions are final. The request must be received by the next lab period after the lab report has been returned.

Note that the IA will have the discretion to re-grade your entire lab report, not just the section that you feel is in error.

Course Requirements

In order to pass this course, you must successfully complete the following:

Turn in all assignments, even if they are late.

Take all exams, or get instructor's approval on alternates.