



**Course Title:** General Biochemistry Lab I                      Fall 2023 (50:115:407)

**General Information:** Biochemistry Lab will be an in-person course only.

Lab instructors: Derek Puyat (01), Tanisha Dhakephalkar (02,03)

Lab supervisor: Jinglin Fu

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              Jinglin Fu   [jf604@camden.rutgers.edu](mailto:jf604@camden.rutgers.edu)

Lab time:	Section 01	Thursday	2:00 PM - 5:00 PM	Puyat
	Section 02	Friday	8:00 AM - 11:00 AM	Dhakephalkar
	Section 03	Monday	12:30 PM - 3:30 PM	Dhakephalkar

Location: Science Building #B20

Office hours: Science Building # 110

                  Derek Puyat: 12:45 – 1:45, Tuesday

                  Tanisha: 11 – 12 pm, Friday

Course pre/co - requisites: GenBiochem I lecture

Required Text: No special textbooks. All the lab instruction and protocols will be posted on the Canvas.

Biochemistry Lab I is a prerequisite for taking Biochemistry Lab II.

**Disabilities and disability services:** A student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation. For more information, please click <https://success.camden.rutgers.edu/disability-services>

**Course Description** This course is designed to give students lab experience in some of the techniques used in biochemistry/ biotechnology research. We will focus on the practical use of these techniques, as well as the data analysis that can be used to identify/quantify substances and/or predict specific experimental outcomes.

**Learning Goals:** Students will be able to identify different biomolecules (e.g. DNA and protein) and determine their concentrations by spectroscopy, perform kinetical analysis of enzyme reactions and inhibition, and practice biomolecule separation using multipole chromatography methods like ion-exchange, size-exclusion and TLC.

**Lab Safety** Students are expected to abide by the general lab safety rules as reviewed by the safety video. **If you have not watched the Rutgers lab safety video before, talk to the instructor! Lab coats, Goggles**



**and gloves** are required in the lab for your personal protection. Full eye shield goggles are required, not the glasses type shields. Nitrile gloves are provided in the lab with small, medium and large size.

**Closed-toe shoes are required. If open-toe shoes (e.g. sandal) are worn, you will be asked to leave the lab, and attendance will be recorded as an unexcused absence.**

No eating or drinking in the lab at any time.

**Cell phone and computer use:** Cell phones or other communication devices may not be used during the lab and must be silenced. During lab, cell phones may only be used in the event of an emergency. Please notify the instructor if an emergent condition arises that requires the use of a cell phone. During lab, cell phones must remain silent and stored in your bag. **Speaking on a cell phone without the instructor's permission will result in a deduction of lab performance points. For your own safety, please refrain from text messaging as you may have biochemical residue on your fingers.**

During lab, computers may be used for data analysis, academic research or working on lab reports only. Please respect the other members of your group and refrain from playing any music and/or videos.

**Attendance:** Attendance at all labs is mandatory. **Lab cannot be made-up and there are no virtual lab options. Unexcused absence** will result in an automatic drop of one letter grade from your final grade. For example, assume a final grade of A:

- Missing one lab, Grade A → B;
- Missing two labs, A → C;
- Missing three labs, A → D;

**Excused absences** include medical emergency (physician's note), COVID-19 related symptoms or quarantine, and family emergency (e.g. funeral, wedding) or other compelling circumstances that prevent your attendance in the lab. Travel for vacations or parties and NOT excused absences. For excused absence, official evidence must be submitted to the instructor 24 hours before the lab class whenever possible. Excused absence will not result in an automatic drop of grade. **To avoid an absence, it is possible to temporarily switch a student to another section if he or she has difficulty attending the registered section. It is up to the student to arrange this.**

**Absence from three (excused or unexcused) or more labs will result in an "Incomplete" or "Failing" grade.**

**Late policy:** If you are more than **10 mins** late, you will not be allowed to perform the lab. You can observe others performing the experiment. If you are **more than half an hour late, you will not be allowed to enter the lab.** It will be counted as one unexcused absence, unless there are compelling circumstances that prevent your attendance in the lab (e.g. medical emergency)

Please contact the instructor as early as possible if you expect to be late. **Frequent late attendance will also affect the performance score in the final assessments and grades.**

### **Assessments and Grades:**

Your final grade will be determined by your performance in the lab, notebook, lab reports, datasheet, pre-lab quizzes, and final presentation.

<b>Performance</b>	<b>20%</b>
<b>Notebook</b>	<b>10%</b>
<b>Pre-lab quizzes</b>	<b>10%</b>
<b>Lab reports or datasheet</b>	<b>50%</b>
<b>Presentations</b>	<b>10%</b>
<b>Total:</b>	<b>100%</b>

Final Grade Percentage	Letter Grade
90.00 – 100.00	A
85.00 – 89.99	B+
80.00 – 84.99	B
75.00 – 79.99	C+
70.00 – 74.99	C
60.00 – 69.99	D
0.00 – 59.99	F

**The lab performance** is evaluated by: pre-lab preparation, attendance, ability to understand and follow lab procedures, ability to independently finish lab calculations, lab performance including observations and interpretation of lab results, and ability to work as a team member.

### ***Notebook Requirement***

Students will keep a notebook for all the experiments except the first lab. This notebook will be used for planning experimental procedures and recording data. Before performing the experiment, the instructor needs to approve on your designed procedures. **For each lab, the instructor's signature on the notebook is required.** Each lab needs to be labeled with a title and a date. A Table of Contents page is also required and should contain a list of all the labs and their page numbers.

### ***Pre-lab quizzes***

There will be 10 pre-lab quizzes to help students understand the experiment that is going to be conducted. **Quizzes will be posted online on Canvas** at least 48 hours prior to the lab. Students are required to read the instructions, complete the quiz, and submit it on Canvas by midnight of the lab day. **Failure to submit the quiz on time will result in the loss of points.**

### ***Lab reports or data report***

**The lab report** should be a typed summary of what you did and learned in the lab. A general lab report includes Introduction, Experimental Materials and Methods, Results, Discussion Questions and Citations. A sample lab report is posted in the Course Information section on Canvas. It is strongly suggested that you look over the sample report prior to writing your lab reports. Lab reports should be

**less than 10 pages. A data report should include analyzed Table and figures, appropriate captions and discussion questions. Each student needs to submit their own report, even though they work in a group.** All lab reports must be submitted as electronic copies to receive a grade in the course. Lab reports are an individual effort that displays your knowledge and understanding of the lab material. Reports must be written in your own words. You cannot copy verbatim from any source, including other individuals in the course. You also cannot simply copy lab reports from your lab partners, for example, identical lab introduction or discussion. Any infractions to this rule are considered academic plagiarism. You are welcome to consult with your lab partner or other people in the class; however, **you must write your lab report as an individual effort.** You must cite any references that you use in preparing your reports.

**Electronic copy of lab reports:** You must submit an electronic copy via Canvas/Assignment. **Failure to do so will result in a reduction of report points for the lab. The electronic copy must be received before the due date.** The filename must be as follows: lab#-your name. For example, if John Doe was turning in the third lab report, he would submit a file with the name lab3-john doe. Any files submitted with an incorrect name will be rejected.

For revised reports, there is an **automatic 5 points deduction.** It means that a revised report can receive a maximal of 95 points if the full point is 100.

For the late submissions, **grades will be reduced by 10 points per week late.** e.g. 10 pt reduction for less than 1 week late, 20 pt for 2 week late, 30 pt for 3 week late ...

### **Academic Integrity**

You are expected to do your own work and record/describe the experiments we do in your own words. Copying someone else's procedure/data/figure is considered academic plagiarism. For example, two students can work together in a lab to collect data. But they should analyze the data and plot figures independently. The student cannot copy analyzed data/figure/table from another student.

**First infraction will receive a Warning, and result in "0" points for the report, no re-submission. Second infraction will result in a failing grade of the class as well as marked with E\* (failure due to academic dishonesty).**

You cannot directly copy the background or procedures on the instruction manual. Write the Lab background and methods in your own language.

Please see: <http://www.camden.rutgers.edu/RUCAM/Academic-Integrity-Policy.php> for more information about the policy.

### **Waste disposal**

Only water can be directly poured into the sink. Other wastes such as salt buffer and natural biomolecules including proteins, peptides and DNA must be stored in the Biochemical Waste Container/Beaker. Plastic waste including pipette tips, tubes must be deposited into Plastic Waste Container. **Organic reagents, indicators and dyes** must be disposed into specific waste containers, stored in the fume hood in SCI-B20.

				<b>General Biochemistry Lab I - Tentative Schedule (Fall 2023)</b>	
S01	S02	S03			
<b>Date</b>			<b>Experiment</b>		<b>Report Type (R/Q/D/P)</b>
9/7	9/8	9/11	1. Course Introduction, and Basic Methods and Calculations		D
9/14	9/15	9/18	2. Buffer Preparation and pH Measurement		D/Q
9/21	9/22	9/25	3. Determination of Nucleic Acids by Spectroscopy		D/Q
9/28	9/29	10/2	4. Quantitative Determination of Proteins by Spectrophotometry		R/Q
10/5	10/6	10/9	5. DNA Extraction from Strawberries		Q
10/12	10/13	10/16	6. Protein Structure and Pymol		D/Q
10/19	10/20	10/23	7. Ion Exchange Chromatography		D/Q
10/26	10/27	10/30	8. Gel-filtration Chromatography		D/Q
11/2	11/3	11/6	9. Introduction to Enzymology		D/Q
11/9	11/10	11/13	10. Michaelis-Menten Enzyme Kinetics		D/Q
11/16	11/17	11/20	11. Enzyme Kinetics Fitting		R/Q
11/21	11/22	11/27	12. Enzyme Inhibition I		D/Q
11/30	12/1	12/4	13. T.B.D. (for backup and makeup labs)		
12/7	12/8	12/11	Final Presentations		P

R = Lab Report      D = Data Report      P = Presentation      Q = Pre-lab Quiz

After reading the syllabus, please sign at the bottom to show your understanding and compliance to follow the lab rules.

Name:

Signature:

Date: