Course Title: GenBiochem Lab II Spring 2024 (50:115:408)

General Information:

Lab TA/Instructor: Youwen (Warren) Zhang youwen.zhang@rutgers.edu
TANISHA DHAKEPHALKAR td513@scarletmail.rutgers.edu

Lab Supervisor: Jinglin Fu

Lab time: Section 01 Tuesday 5:45 PM - 8:45 PM
Section 03 Wednesday 12:30 PM - 3:20 PM

Location: Science Building #B20

Office hours: Youwen (Warren) Zhang, Tuesday free period (11:20-12:20 pm) or by appointment via https://calendly.com/warren-zhang/15-min-meeting.
TANISHA DHAKEPHALKAR, Wednesday free period (11:20-12:20 pm) or by appointment.

Course pre/co-requisites: Biochemistry Lab I, Biochemistry Lecture I&II
Required Text: No textbooks. All the lab instructions and protocols will be posted on Canvas.

Disabilities and 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 expose students to independent research and comprehensive biochemistry experimentation. Advanced technologies will be introduced and practiced, including PCR, gel electrophoresis, enzyme inhibition and cascade, complex UV-VIS/fluorescence spectrophotometry and scientific data analysis (statistical significance, data fitting, etc.).

Learning Goals: Students will be able to:
Use UV-VIS/fluorescence spectrometry to characterize biochemical relations.
Interpret and fit important kinetic parameters.
Execute advanced bio-techniques and DNA profiling.
Students will also learn the computational design of DNA and protein nanostructures.

Canvas: All course-related information, announcements, pre-lab quizzes, and assignments are posted on the Canvas site.

Lab Safety Students are expected to abide by the general lab safety rules as reviewed by the safety video. **If you have not watched any Rutgers lab safety videos before, talk to the instructor! Lab coats, Goggles and gloves** are required in the lab. This is for protecting yourself.

Full-eye shield goggles are required, not the glasses-type shields. Nitrile gloves are provided in the lab in small, medium and large sizes. **Closed-toe shoes are required by the lab. Wear open-toe shoes (e.g. sandal) will be forced to leave the lab, and account as an excused 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. **Speak on the cell phone without the instructor's permit will result in a decrease of lab performance points! No texting message, think about what may leave on your finger!**

During lab, computers may be used only if you are doing data analysis, academic search or working on the reports. Please respect the other members of your lab and refrain from playing any music and/or videos.

Attendance: Attendance of all labs is mandatory. **Lab cannot be make-up, no virtual lab option!**
Unexcused absence will result in an automatic drop of one letter grade for 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 absence includes 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; **not includes** vacation travel or parties. For excused absence, official evidences must be submitted to the instructor and better notify 24 hours before the lab class. Excused absence will not result in an automatic drop of grade. **To avoid absence, it is possible to temporarily switch a student to another section if he or she has difficulty to attend the registered section.**

Absence from three (excused or unexcused) or more labs will result in an "Incomplete" or "Failing" grade.
Late policy: Late more than **10 mins** will not be allowed to perform the lab. You can observe other to perform the experiment**. Late more than half an hour, 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 are expecting a late attendance. **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.

Performance	**10%**
Notebook	**10%**
Pre-lab quizzes	**10%**
Lab reports or datasheet	**60%**
Presentations	**10%**
Total:	**100%**

The lab performance is evaluated by: How prepared you are for the lab, you attend the lab on time, understand and follow lab procedures, independently complete lab calculations, lab skills, how careful you are performing experiments, observing and interpreting lab results; how you contribute to a group experiment and report.

Notebook Requirement

Students will keep a notebook for all of the experiments except the first lab. This notebook will be used for planning experimental procedure and recording data. Before performing the experiment, the instructor needs to approve on your designed procedures. **For each lab, instructor's signature on the notebook is required.** Each lab needs to label with title and date. The cover page is also required summarizing all the labs and pages.

Pre-lab quizzes

There will be 10 pre-lab quizzes to help students to understand the experiment that is going to conduct. **Quizzes will be posted online on Canvas** at least 48 hours prior the lab. Students are required to read the instruction and complete the quizzes and submit it on Canvas by the midnight of the lab day and submit the printed copy to the instructor during the lab period. **Fail 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. Students need to submit a report on their own, even they work in a group.**

All lab reports must be submitted in electronic copies for receiving 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 as 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 submission, **it will reduce 10 points per late week.** 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 as 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 text, analyzed data/figure/table from another student.

First infraction to the rule will receive a Warning, and result in "0" point of the report, no re-submission.
Second infraction the rule will result in the failure of the class marked with E* (failure due to academic dishonesty), as well as a report of academic plagiarism to the student office.

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 deposed into Plastic Waste Container. **Organic reagents, indicators and dyes** must be disposed into the specific waste containers, stored in the fume hood in SCI-B20.

S01	S03	
Date		**Experiment**	**Submission (Q/D/R)**
1/16	1/17	1. Course Introduction/Syllabus/ Buffer Preparation	Signed Syllabus
1/23	1/24	2. Glucose detection by enzyme cascade - I	Q/D
1/30	1/31	3. Glucose detection by enzyme cascade - II	Q/**R**
2/6	2/7	4. The uptake of glucose by phosphorylation	Q/D
2/13	2/14	5. Log P measurement	Q/D
2/20	2/21	6. DNA binding with tetracycline	Q/D
2/27	2/28	7. Computational Nucleic Acid Detection –I	Q/D
3/5	3/6	8. Computational Nucleic Acid Detection –II	Q/D
3/12	3/13	Spring Break	-
3/19	3/20	9. Cellular Respiration - What sugar does yeast like best	Q/D
3/26	3/27	10. Testing food for nutrients	Q/D
4/2	4/3	11. DNA fingerprint profiling: STRs analysis I/ PCR	Q
4/9	4/10	12. DNA fingerprint profiling: STRs analysis-II/Gel electrophoresis	Q/D
4/16	4/17	13. T.B. D	
4/23	4/24	14. Final Presentation	P

V: Virtual; In: In-person; Q: quiz; D: Data sheet; R: Lab report; P: presentation

After reading the syllabus, please print and sign below to indicate that you understand and will comply with the lab rules. Return this copy to your TA. An electronic version of this syllabus is available on Canvas under course materials.

Name

Date