NJIT New Jersey Institute of Technology

THE COLLEGE OF SCIENCE AND LIBERAL ARTS

THE DEPARTMENT OF CHEMISTRY AND ENVIRONMENTAL SCIENCE

CHEM 475: Biochemistry Laboratory
Fall 2025 Course Syllabus

NJIT Academic Integrity Code: All Students should be aware that the Department of Chemistry & Environmental Science (CES) takes the University Code on Academic Integrity at NJIT very seriously and enforces it strictly. This means that students must not commit any forms of plagiarism, such as copying homework, class projects, or lab assignments, or cheating in quizzes and exams. Under the University Code on Academic Integrity, students are obligated to report any such activities to the Instructor.

COURSE INFORMATION

Course Description: This course will offer chemistry and related (chemical engineering, biology, bioinformatics, bioengineering) students fundamental laboratory approaches to biochemistry and biotechnology. The experiments will reinforce concepts learned in biochemistry lecture classes.

Number of Credits: 2

Prerequisites: CHEM 244 or CHEM 473 with a grade of C or better.

Course-Section and Instructors

Course-Section	Instructor
CHEM 475-002	Edgardo Farinas

Office Hours for All Chemistry & Environmental Science Instructors:
Email: edgardo.t.farinas@njit.edu
Office Hours: Monday from 3:00-5:00 PM in Tiernan 386 or by appointment

Required Textbook:

Title	CHEM 475: Biochemistry Laboratory Manual
Author	
Edition	
Publisher	
ISBN #	

University-wide Withdrawal Date: Follow the NJIT academic calendar. It will be strictly enforced.

Learning Outcomes: Students can design and perform the research in Biochemistry

POLICIES

All CES students must familiarize themselves with, and adhere to, all official university-wide student policies. CES takes these policies very seriously and enforces them strictly.

Grading Policy: The final grade in this course will be determined as follows:

Lab Reports	40%
Attendance and participation	10%
Safety	10%
Midterm Exam	20%
Final Exam	20%

Your final letter grade in this course will be based on the following tentative curve:

A	90 - 100	**C**	70 - 74
B+	85 - 89	**D**	60 - 69
B	80 - 84	**F**	0 - 50
C+	75 - 79		

Attendance Policy: Attendance at classes will be recorded and is **mandatory**. Each class is a learning experience that cannot be replicated through simply "getting the notes."

Lab report Policy: Lab report is an expectation of the course and will be used in the determination of the final letter grade as described above. The Lab report should be written by your words with the style of the scientific article. All structures of chemicals used in the lab should be included in the method part. Submission due is every Sunday 11:59PM by email (No hard copy submission is accepted).

Exams: There will be one midterm exam held in class during the semester and one comprehensive final exam. The following exam periods are tentative and therefore possibly subject to change:

Midterm Exam	Week 9
Final Exam Period	Week 14

The final exam will test your knowledge of all the course material taught in the entire course.

Makeup Exam Policy: There will normally be **NO MAKE-UP QUIZZES OR EXAMS** during the semester. In the event that a student has a legitimate reason for missing a quiz or exam, the student should contact the Dean of Students office and present written verifiable proof of the reason for missing the exam, e.g., a doctor's note, police report, court notice, etc. clearly stating the date AND time of the mitigating problem. The student must also notify the CES Department Office/Instructor that the exam will be missed so that appropriate steps can be taken to make up the grade.

Cellular Phones: All cellular phones and other electronic devices must be switched off during all class times. Such devices must be stowed in bags during exams or quizzes.

ADDITIONAL RESOURCES

Chemistry Tutoring Center: Located in the Central King Building, Lower Level, Rm. G12. Hours of operation are Monday – Friday 10:00 am - 6:00 pm. For further information please click here.

Accommodation of Disabilities: The Office of Accessibility Resources and Services (***formerly known as Disability Support Services***) offers long-term and temporary accommodations for

undergraduate, graduate and visiting students at NJIT.

If you need accommodations due to a disability please contact Chantonette Lyles, Associate Director at the Office of Accessibility Resources and Services at 973-596-5417 or via email at lyles@njit.edu. The office is located in Fenster Hall Room 260. A Letter of Accommodation Eligibility from the Office of Accessibility Resources Services office authorizing your accommodations will be required.

For further information regarding self-identification, the submission of medical documentation and additional support services provided please visit the Accessibility Resources and Services (OARS) website at:

- http://www5.njit.edu/studentsuccess/disability-support-services/

Important Dates (See: Spring 2024 Academic Calendar, Registrar)

Course Outline

Lecture	Date	Topic	Assignment
1	1/24	Introduction: Check-in and safety in the biochemistry laboratory	
2	1/31	1. Spectrophotometry: Create a standard curve and determine concentration of unknown using spectrophotometer	
3	2/07	2. Quantification of protein concentration: Determine the concentration of a protein using the Bradford assay	Lab report for Exp 1
4	2/14	3. Chromatography: Separate a mixture of biomolecules based on size using gel filtration chromatography	Lab report for Exp 2
5	2/21	Molecular biology techniques	
6	2/28	4. Transformation: Insert DNA into *E. coli* and select positive cells	Lab report for Exp 3
7	3/07	5. Mini-prep: isolate and characterize plasmid	Lab report for Exp 4
8	3/14	6. Polymerase chain reaction	Lab report for Exp 5
9	3/21	Exam	
10	3/28	7. Agarose gel electrophoresis: Determine the size of the DNA fragment	Lab report for Exp 6
11	4/04	8. Protein isolation: Purify a single protein from a complex mixture of proteins	Lab report for Exp 7
12	04/11	9. SDS-PAGE: Determine the purity of the isolated protein.	Lab report for Exp 8
13	04/18	10. Enzyme kinetics: Determine the kinetic parameters (Kcat and KM) of an enzyme	Lab report for Exp 10
14	04/25	Exam	Lab report for Exp 11