

Fall 2020

## **CHEM 475-101: Biochemistry Lab I**

Yongick Kim

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## Chemistry: *Fall 2020 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 there must not be any forms of plagiarism, i.e., copying of homework, class projects, or lab assignments, or any form of 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 the chemistry and related (chemical engineering, biology, bioinformatics, bioengineering) students fundamental laboratory approaches for biochemistry and biotechnology. These 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 475-101	Yongick Kim

**Office Hours for All Chemistry & Environmental Science Instructors:**

Email: [ykim@njit.edu](mailto:ykim@njit.edu)

Office Hours: Mon and Tue from 10:00-11:00AM or by appointment

**Required Textbook:** No textbook is required. Open source material will be used

Title	
Author	
Edition	
Publisher	
ISBN #	

**University-wide Withdrawal Date:** The last day to withdraw with a W is Monday, November 9, 2020. It will be strictly enforced.

## Learning Outcomes:

## 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%
Midterm Exam	30%
Final Exam	30%

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.”

**Homework Policy:** Homework is an expectation of the course. The homework problems set by the instructor are to be handed in for grading and will be used in the determination of the final letter grade as described above.

**Exams:** There will be two midterm exams 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	11/2/2020
Final Exam Period	December 15 - December 21

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:** 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 are in need of accommodations due to a disability please contact Chantonette Lyles, Associate Director at the Office of Accessibility Resources and Services at [973-596-5417](tel:973-596-5417) or via email at [lyles@njit.edu](mailto: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: Fall 2020 Academic Calendar, Registrar  
<https://www5.njit.edu/registrar/fall-2020-academic-calendar/>

Date	Day	Event
September 1	T	First Day of Classes
September 5	S	Saturday Classes Begin
September 7	M	Labor Day
September 8	T	Monday Classes Meet Last Day to Add/Drop a Class Last Day for 100% Refund, Full or Partial Withdrawal
September 9	W	W Grades Posted for Course Withdrawals
September 14	M	Last Day for 90% Refund, Full or Partial Withdrawal No Refund for Partial Withdrawal after this date
September 28	M	Last Day for 50% Refund, Full Withdrawal
October 19	M	Last Day for 25% Refund, Full Withdrawal
November 9	M	Last Day to Withdraw
November 25	W	Friday Classes Meet
November 26	R	Thanksgiving Recess Begins
November 29	Su	Thanksgiving Recess Ends
December 10	R	Last Day of Classes
December 11	F	Reading Day 1
December 14	M	Reading Day 2
December 15	T	Final Exams Begin
December 21	M	Final Exams End
December 23	W	Final Grades Due

## Course Outline

Lecture	Section	Topic	Assignment
1	9/8	Introduction: Basic practices and techniques in the biochemistry laboratory	

2	9/14	Spectrophotometry: Create a standard curve and determine concentration of unknown using spectrophotometer	Lab report
3	9/21	Quantification of protein concentration: Determine the concentration of a protein using the Bradford assay	Lab report
4	9/28	Chromatography: Separate a mixture of biomolecules based on size using gel filtration chromatography	Lab report
5	10/5	Gel electrophoresis of proteins: Separate a mixture of proteins using gel electrophoresis and determine the size	Lab report
6	10/12	Protein isolation: Purify a single protein from a complex mixture of proteins	Lab report
7	10/19	SDS-PAGE: Determine the purity of the isolated protein	Lab report
8	10/26	Enzyme kinetics: Determine the kinetic parameters ( $K_{cat}$ and $K_M$ ) of an enzyme	Lab report
9	11/2	Midterm Exam	
10	11/9	Polymerase chain reaction technology: Amplify DNA using PCR	Lab report
11	11/16	Agarose gel: Determine the size of the DNA fragment	Lab report
12	11/23	Miniprep: Isolate and characterize a plasmid.	Lab report
13	11/30	Transformation: Insert DNA into E. coli and select positive cells	Lab report
14	12/7	Bioinformatics: Use the internet to search databases and visualize molecular structures	Lab report
15		Final Exam	
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