NJIT New Jersey Institute of Technology

THE COLLEGE OF SCIENCE AND LIBERAL ARTS

THE DEPARTMENT OF CHEMISTRY AND ENVIRONMENTAL SCIENCE

***Chemistry:***
***GENERAL CHEMISTRY LAB II (CHEM126A-002)***
***Spring 2025 Course Syllabus***

**NJIT Academic Integrity Code**: (Refer to the PDF link provided.) 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 there must be no plagiarism, i.e., copying homework, class projects, lab assignments, or cheating in quizzes and exams. Under the University Code on Academic Integrity, **students must report such activities to the instructor.**

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## COURSE INFORMATION:

**Course Description**: CHEM126A (General Chemistry Lab II) is a laboratory course designed concurrently with CHEM126. Instructions are in the lab book, and concepts are from the text and lecture of the CHEM126 course. The experiments are designed to provide undergraduate students with further practical experience and continue to train students with laboratory techniques/equipment standards for chemistry laboratories.

***Number of Credits***: 1

***Course-Section and Instructors***

| Course-Section | Instructor | Email | Office Hours |
|---|---|---|---|
| CHEM126A-002 Thursdays, 1:00 PM - 3:50 PM **Tiernan Hall 208** | Carlos Pacheco, Ph.D. **Office: B006**. **NMR laboratory: B008** | carlos.n.pacheco@njit.edu | Thursdays, 4:30-5:30 PM; NMR laboratory, Tiernan Hall**, B008** or by appointment (in-person or virtual) |

**Required Textbook**:

| | |
|---|---|
| **Title** | Laboratory Manual, Chemistry, a Molecular Approach |
| **Author** | John B. Vincent, and Erica Livingston |
| **Edition** | 5th edition |
| **Publisher** | Pearson |
| **ISBN #** | 013498983X |

**University-wide Withdrawal Date**: The last day to withdraw with a **W** is Monday, April 7, 2025. It will be strictly enforced.

**Learning Outcomes:**

- Comply with the safety rules when working in a chemistry laboratory.
- Continue to improve logical reasoning ability.
- Learn to integrate seemingly unrelated properties into patterns.
- Apply some synthetic techniques in general chemistry.
- Continue to practice preparing a lab report.
- Prepare for continued studies in chemistry and related fields.

**Required Materials (All the materials below must be purchased and brought to the lab by the students):**

- Lab book
- Lab coat
- Safety goggles
- Disposable nitrile gloves

**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 and Accuracy: 85%
Pre-lab: 10%
Cleanliness of lab bench and sink: 5%

**Grading scheme:**

| | | | |
|---|---|---|---|
| **A** | 90 - 100 | **C** | 70 - 74.5 |
| **B+** | 85 - 89.5 | **D** | 55 - 69.5 |
| **B** | 80 - 84.5 | **F** | <55 |
| **C+** | 75 - 79.5 | | |

***Attendance Policy***:

- **Attendance is mandatory.** Students will be allowed **only one make-up lab** at the end of the semester. Suppose a student has a legitimate reason for missing a lab. In that case, the student should contact the Dean of the Students office and present written verifiable proof of the reason for missing the lab, *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 instructor through the Dean of the students. **Two unexcused absences will result in an automatic failure.**
- **Students will be asked to sign the attendance sheet each week when arriving in the lab.**
- All experiments must be completed during the same lab period.
- Students will be shown a demonstration video for each experiment. **They should watch the video before attending class.**

***Pre-lab Questions:***

**EACH student** must complete Pre-lab Questions in the lab book before the class for each experiment and watch the video of the experiment.

****Attention: Only on-time pre-lab Questions will be accepted.**

***Lab Reports:***

A lab report will be submitted for each experiment. The report includes the completed Report Sheet and Questions in the lab book and a separate page for your calculations if needed. **EACH GROUP** should submit **ONE lab report**. Students have until **Sunday at 11:59 PM** to finish the report for all experiments.

****Attention: Only on-time lab reports will be accepted.**

***Working in Groups:***

- Students may perform experiments with **one or two** other people. Students in groups larger than **three** will receive a **zero** for that lab grade.
- Students working in groups must arrive at the lab and begin the experiment **simultaneously. They must remain in the lab until the experiment is completed.**
- Students collaborating in groups can experiment and calculate together. However, each group is required to submit ONE lab report that includes data and calculations derived from their work.

***Make-up Policy:***

The final week of the semester for CHEM126A-002 is designated for students to make up a missed lab. During this time, students can complete only **one missed experiment. However, students may make up more than one laboratory experiment if they have submitted the justification to the Dean of the Student's Office for the missed laboratory(s).**

**IMPORTANT - Cellular Phones and AI tools:**

**- Please use mobile phones and other electronic devices responsibly during class.**

**- Using various AI tools to complete laboratory reports is optional, provided you properly cite the source. Nevertheless, the laboratory reports and the pre-laboratory questions related to the experiment should primarily demonstrate your work and analytical thinking.**

***Safety and Clean-Up Policy:***

- **WEAR SAFETY GOGGLES AT ALL TIMES IN THE LABORATORY.**
- Clothing that covers your legs and shoulders is required. No shorts or short skirts.
- Everyone will be required to wear lab coats and gloves during each experiment.
- Closed shoes must always be worn. **No sandals**.
- Food or drink is not allowed in the lab.
- Turn off cell phones. Texting is not permitted in the lab.
- Properly dispose of waste materials.

- Clean your workspace at the end of each lab session and wash your hands before leaving the laboratory. A **5% PENALTY WILL BE APPLIED TO YOUR LAB REPORT SCORE FOR FAILURE TO CLEAN UP PROPERLY!**

## 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.

***Accommodation of Disabilities:*** The Office of Accessibility Resources and Services (*formerly known as Disability Support Services*) provides both long-term and temporary accommodations for undergraduate, graduate, and visiting students at NJIT. If you require accommodations due to a disability, please get in touch with Marsha Williams-Nicholas, M.A., E.D.M., Accessibility Resources, and Services Manager, at 973-596-2994 or via email at marsha.williamsnicholas@njit.edu. The office is located in Kupfrian Hall 201. A Letter of Accommodation Eligibility from the Office of Accessibility Resources and Services authorizing your accommodations will be necessary. For self-identification information, submitting medical documentation, and additional support services offered, please visit the Accessibility Resources and Services (OARS) website at https://www.njit.edu/accessibility/accommodations-and-support-services.

## Laboratory Schedule

Below is a tentative weekly schedule. Students will be notified of any changes from the syllabus throughout the semester.

| Date | Experiment |
|---|---|
| 1/23 | Check in, Introduction, and Safety |
| 1/30 | Colligative Properties: Freezing point depression (Experiment 18) |
| 2/6 | Activation Energy Determination (Experiment 19C) |
| 2/13 | Kinetics Lab (Handout) |
| 2/20 | Equilibrium Constant and Le Chatelier's Principle (Experiment 20) |
| 2/27 | Absorption Spectrum and Beer's Law (Handout) |
| 3/6 | Acid and Base Titration (Experiment 22) |
| 3/13 | Determining the Buffer Capacity of Antacids (Experiment 23) |
| 3/27 | Group I Cations (Experiment 27A) |
| 4/3 | Group IV Cations (Experiment 27D) |
| 4/10 | Anions (Experiment 27E) |
| 4/17 | Esters (Experiment 28) |
| 4/24 | Make up (**one missed experiment only**) |