

Fall 2020

## **CHEM 339-101: Analytical Physical Chemistry**

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### **Recommended Citation**

Krishtopa, Larisa, "CHEM 339-101: Analytical Physical Chemistry" (2020). *Chemistry and Environmental Science Syllabi*. 282.

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**Analytical Physical Chem 339**

*FALL 2020 Course Syllabus*

To address the limitations associated with the pandemic CoVid 19, the following modifications to the laboratory course are introduced:

1. Limited number of *hands-on* laboratory experiments will be performed (face-to-face option). To enable physical distancing, only 6 students will be allowed attending each class session in person. We will follow a rotating schedule: 6 students in the classroom and 10 students online (see group's assignment on Canvas). All students will work individually.
2. The *synchronous online* part of the course will be held via a conference call using WebEx software (Friday, 6:00 - 10:05 pm). In lieu of real experimental data the students will be given individually artificial (simulated) data sheets for the experiment on the day when the class is scheduled. All remaining actions as well the rules remain the same as outlined in the original syllabus (i.e., the report submissions, the deadlines, the cheating/plagiarism policies, etc.). The data sheets will be provided via Canvas.
3. For several experiments (#1 and #8) video clips are available on Canvas. The lab manuals are available for all experiments on Canvas.
4. The lab reports must be entered in a regular manner, the reports will be graded as usual. In the lab reports detailed calculations based on the provided data, showing all steps in the calculations, MUST be presented. This is a very important requirement; the reports will be graded accordingly.
5. For the final presentation, power point slides must be posted via Canvas two days before scheduled presentation date. You will be assigned lab experiments for the presentations in advance.
6. The final presentations will be made via a conference call using WebEx software as well.

**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.

The shift to remote and converged teaching due to the COVID-19 pandemic has required that both instructors and students make changes to their normal working protocols for courses. Students are asked to practice extra care and attention in regard to academic honesty, with the understanding that all cases of plagiarism, cheating, multiple submission, and unauthorized collaboration are subject to penalty. Students must properly cite and attribute all sources used for papers and assignments. Students may not collaborate on exams or assignments, directly or through virtual consultation, unless the instructor gives specific permission to do so. Posting an exam, assignment, or answers to them on an online forum (before, during, or after the due date), in addition to consulting posted materials, constitutes a violation of the university's Honesty policy. Likewise, unauthorized use of live assistance websites, including seeking "expert" help for specific questions during an exam or quiz, can be construed as a violation of the honesty policy. All students should be familiar with the NJIT Academic Integrity Code.

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## COURSE INFORMATION

**Course Description:** *Converged Learning - Course meeting partially face-to-face and partially synchronous online. (F: 6:00 pm-10:05 pm). Synchronous Online: Online course taking place during day and time noted (F: 6:00 pm - 10:05 pm).*

This course will offer students an introduction to physical and analytical chemistry laboratory techniques. The application of principles learned in lecture will be reinforced by the experiments done in this lab. They will also provide exposure to analytical and other techniques used in chemistry and chemical engineering.

**Number of Credits:** 2

**Prerequisites:**

CHEM 339: [CHEM 236](#) and [MATH 225A](#)

Laboratory experiments apply and extend the basic knowledge of physical chemistry acquired in the lecture. Reports and presentations are an essential part of the course.

**Course-Section and Instructors**

| Course-Section | Instructor  | Office Hours                          |
|----------------|---|---------------------------------------|
|                | Dr. Larisa Krishtopa<br>Room 216 York, phone x5858<br>larisa.g.krishtopa@njit.edu | Office Hours: on request via<br>Webex |

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

**Learning outcomes:**

Upon the successful completion of this course, the students should be able to:

- Apply the physical and analytical chemistry principles to the practical laboratory experiments
- Analyze data statistically and assess reliability of the results
- Interpret the experimental results, draw conclusions, and communicate effectively through oral and written reports

## **POLICIES**

**All students must familiarize themselves with, and adhere to, all official university-wide student policies. We take these policies very seriously and enforce them strictly.**

**Absolutely NO Late submissions! Report which is past deadline will not be accepted.**

**Grading Policy:** The total grade in this course will be a composite of your reports, quizzes and oral presentation. The grade of reports in this course will be determined as follows:

|  |                  |
|--|------------------|
| Preliminary Experiments (i)              | 50 pts           |
| Preliminary Experiments (ii)             | 50 pts           |
| Experiments 1-14                         | 100 pts          |
| Individual oral presentations            | 200 pts          |
| On-line class presence and participation | 10 pts per class |
| Each Quiz                                | 50 pts           |

## **LAB REPORT GRADING**

| <b>SECTION</b>                   | <b>MAX SCORE</b> |
|----------------------------------|------------------|
| Abstract                         | 5                |
| Introduction/Objective           | 5                |
| Theory                           | 5                |
| Experimental Procedure           | 5                |
| Results – Data/Calculation/Plots | 30               |
| Results – Interpretation         | 30               |
| Results – Error Analysis         | 15               |
| Discussion                       | 5                |
| <b>TOTAL</b>                     | <b>100 pts</b>   |

*Zero Tolerance policy is applied. Any occasion of Cheating/Plagiarism will irrevocable lead to an “F” for the course. Additional measures might be imposed as per NJIT Academic Integrity code:*

*“Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at:*

*<http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf>.*

*Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university. If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at [dos@njit.edu](mailto:dos@njit.edu)”*

### **Important:**

- Lab manuals are located on Canvas. Students must have a hard copy of the lab procedure during class.
- Students work individually and submit individual laboratory reports.
- **All assignments must be turned in by due date (see Canvas for date information). Late reports which are past dead line will not be accepted.**
- All reports must be submitted via Turnitin. Reports submitted by e-mail will not be accepted. **No resubmission after due date is allowed!** You must attach a *datasheet* to the report. Reports without such an attachment will not be accepted!
- All electronically submitted reports should be typed, 1.5-spaced, using 12-point font. No handwritten assignments will be accepted.

### **Attendance Policy:**

- Attendance at classes, both face-to-face and/or online, will be recorded and is **mandatory**.
- Students are expected to be present via Webex online meetings on time and in full preparation for the scheduled experiment, and to stay online during allocated class time.
- All absence must be excused by the Dean of Students office.

### **Homework policies: Coming prepared**

- You must have read and understood the manual for the lab you will be performing.
- **A pop quiz will be given to students at the beginning of the class.**

## Important Dates

| <b>Date</b>          | <b>Day</b> | <b>Event</b>         |
|----------------------|------------|----------------------|
| September 1, 2020    | T          | First Day of Classes |
| November 26-29, 2020 | Th-S       | Thanksgiving recess  |
| November 9, 2020     | M          | Last Day to Withdraw |
| December 10, 2020    | Th         | Last Day of Classes  |

## Course outline:

| Date    | Weeks | EXPERIMENTS*                             | Lab Report(s) due           |
|---------|-------|--|-----------------------------|
| Sept 4  | 1     | Safety, Preliminary Experiments i and ii |                             |
| Sept 11 | 2     | Exp 12 and 8                             | Preliminary Experiment (i)  |
| Sept 18 | 3     | Exp 12, 8 and 4B                         | Preliminary Experiment (ii) |
| Sept 25 | 4     | Exp 12, 11 and 14                        | Week 2                      |
| Oct 2   | 5     | Exp 1, 13, 11                            | Week 3                      |
| Oct 9   | 6     | Exp 1,13 and 14                          | Week 4                      |
| Oct 16  | 7     | Exp 1, 13, 3                             | Week 5                      |
| Oct 23  | 8     | Exp 1, 13, 3 and 5                       | Week 6                      |
| Oct 30  | 9     | Exp 1, 13, 5                             | Week 7                      |
| Nov 6   | 10    | Exp 1, 13, 4B                            | Week 8                      |
| Nov 13  | 11    | Exp 7                                    | Week 9                      |
| Nov 20  | 12    | Oral Presentation**                      | Week 10                     |
| Nov 25  | 13    | Oral Presentation                        | Week 11                     |

\*See group assignment.

\*\*Oral presentations are a required component of this lab course.