

# GENERAL CHEMISTRY (21 160 116)

## Spring 2022 Syllabus

### Course Meeting Days/Times:

**Lecture:** Monday, Wednesday 4:00 PM - 5:20 PM

**Location:** 01/19/22 ----Zoom live meetings (link is posted on Canvas)

01/24/22 ----Zoom live meetings (link is posted on Canvas)

01/26/22 ----Zoom live meetings (link is posted on Canvas)

01/31/22 to 05/02/22 In person meetings----**ACK 123**

**\* This course is designed to be synchronous; students are required to attend live lectures/in person lectures as scheduled through Zoom live meetings/physically being inside the classroom.**

**Instructor: Dr. Xinbo Lau**

**Email:** xinbo.lau@rutgers.edu

**Office location:** Olson 204

**Office Hour:** Tuesday 10:00AM-11:30AM

Wednesday 2:00PM-3:30PM

\* Office hours will be hosted through Zoom meeting. Zoom link is posted on Canvas. No appointment is needed, please feel free to join!

### **Recitation:**

Sec	Day	Time	Location	Lecturer
05	Fri	10:00 –11:20 AM	SMT 240	Dr. Lau
06	Mon	10:00 –11:20 AM	SMT 242	Dr. Lau
07	Thur	2:30 –3:50 PM	SMT 245	
08	Thur	1:00 –2:20 PM	SMT 246	

**\*YOU MUST ATTEND THE RECITATIONS IN THE SECTION IN WHICH YOU ARE REGISTERED.**

**\* From 01/18/22 to 01/30/22 Recitations will be hosted remotely, please find the Zoom link from your recitation instructor.**

**\*From 01/31/22 to 05/02/22 Recitations will be hosted in person, and please follow the location listed above.**

## **Required Materials:**

### **Openstax; Chemistry**

*Good news: your textbook for this class is available for free online! If you prefer, you can also get a print version at a very low cost.*

*Your book is available in web view and PDF for free. You can also choose to purchase on iBooks or get a print version via the campus bookstore or from OpenStax on Amazon.com.*

*You can use whichever formats you want. Web view is recommended -- the responsive design works seamlessly on any device. If you buy on Amazon, make sure you use the link on your book page on openstax.org so you get the official OpenStax print version. (Simple printouts sold by third parties on Amazon are not verifiable and not as high-quality.)*

*Chemistry from OpenStax, Print ISBN-10: 1-947172-62-X, Digital ISBN-10: 1-947172-61-1, <https://openstax.org/details/books/chemistry-2e>.*

## **Course Description:**

### **21:160:115-116 General Chemistry (4 credits)**

This course is required of all students who are planning to take Organic Chemistry. Students majoring in Biology, Chemistry, Medical Technology, Pharmacy, and Pre-Med students are required to take this course. Requires **General Chemistry 160:115** and **Pre-Calculus 640:114** as prerequisites.

### **Learning Outcomes/Goals:**

On completion of this course, students should

- have an appreciation for solid state structure, reaction kinetics, reaction equilibrium, thermodynamics, quantum chemistry, nuclear chemistry, and electrochemistry.
- understand the concept of solution concentration.
- be able to use colligative properties to determine molar mass.
- be proficient with calculations involving aqueous acids and bases for titrations, buffer chemistry, and precipitation reactions.

## **Grading**

Exams*	400 points
Quizzes*	200 points
Homework*	100 points
Final Exam (Cumulative)*	<u>300 points</u>
TOTAL	1000 POSSIBLE POINTS

\* There will be 3 in-class exams offered throughout the semester, and the lowest score will be dropped. Therefore, the top 2 in-class exams will count for 400 points, which is 40% of your total grade. **Exams will be administrated in person during the scheduled class period.**

\* 13 quizzes will be offered during recitations. Best 10 quizzes will be counted, and take up 200 points, which is 20% of your total grade. **You are only allowed to take the quizzes during your registered recitation section. Quizzes missed (up to 3) for any reason will be counted as the dropped quizzes. You are only allowed to take the quizzes during your registered recitation section. Quizzes missed (up to 3) for any reason will be counted as the dropped quizzes. *The detailed rules for quizzes please follow the recitation instructor.***

\*There will be assigned Homework, which takes up 100 points, worth 10% of your total grade. There are 2 parts: **There will be 20 points (2%) worth of ONLINE PRELECTURE QUIZ (Canvas), 80 points (8%) worth of ONLINE HOMEWORK (Canvas).**

*Any technical issues (WIFI connection, malfunction of laptop, power problem, etc.) will be student's responsibility.*

**Homework:** Your success in this course is a direct result of working problems. **All the assignments are done through Canvas. Late submission won't be accepted. Keeping track of the due dates of all the assignments is student's responsibility.**

\* Final exam will be hosted during a university designated time period (**Wednesday May 11, 2022, starting from 11:45AM**), which will be **cumulative** (from CH 10 to CH 17). The final exam is mandatory. The final exam will take up 300 points, which is 30%. **Location:** ACK 123 and an additional room (will be announced prior to final exam)

**Expectations:** You are expected to and will need to work a minimum of two to three hours outside of class for every hour in class. We will work through nine chapters this semester and you are required to read 100 – 200 pages per week. Most of the reading will require more than one sitting. You need to be actively engaged as you read. A Chemistry text must be read with pencil/pen and paper in hand, taking notes as you read.

**Final Grades will be based on the following scale (percentage %):**

A = 85.0-100

B+ = 80.0-84.99

B = 70.0-79.99

C+ =65.0-69.99

C = 55.0-64.99

D = 50.0-54.99

F = 0-49.99

## **Important Dates:**

Please find the detailed information by using the following link:

<https://registrar.newark.rutgers.edu/registrar-spring-academic-calendar-0>

1/18/22	1 <sup>st</sup> day of class
1/18/22 - 1/25/22	add/drop
1/26/22	Add only
1/26/22 - 3/21/22	Receive a "W" Grade
3/12/22 - 3/20/22	Spring Recess
5/2/22	Regular Classes End
5/3/22 – 5/4/22	Reading Days
<b>Wednesday 5/11/2022</b>	Final Exam CHEM 116 Starts at 11:45AM

## **Course Policies:**

- As an academic community dedicated to the creation, dissemination, and application of knowledge, Rutgers University is committed to fostering an intellectual and ethical environment based on the principles of academic integrity. Academic integrity is essential to the success of the University's educational and research missions, and violations of academic integrity constitute serious offenses against the entire academic community.

ACADEMIC INTEGRITY POLICY FOR RUTGERS UNIVERSITY can be found at:  
<http://academicintegrity.rutgers.edu/academic-integrity-policy/>

## **Policy on special accommodations:**

### **Accommodation and Support Statement:**

Rutgers University Newark (RU-N) is committed to the creation of an inclusive and safe learning environment for all students and the University as a whole. RU-N has identified the following resources to further the mission of access and support:

**For Individuals with Disabilities:** The Office of Disability Services (ODS) is responsible for the determination of appropriate accommodations for students who encounter barriers due to disability. Once a student has completed the ODS process (registration, initial appointment, and submitted documentation) and reasonable accommodations are determined to be necessary

and appropriate, a Letter of Accommodation (LOA) will be provided. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at [ods.rutgers.edu](https://ods.rutgers.edu). Contact ODS at (973)353-5375 or via email at [ods@newark.rutgers.edu](mailto:ods@newark.rutgers.edu).

**For Individuals who are Pregnant:** The Office of Title IX and ADA Compliance is available to assist with any concerns or potential accommodations related to pregnancy. Students may contact the Office of Title IX and ADA Compliance at (973) 353-1906 or via email at [TitleIX@newark.rutgers.edu](mailto:TitleIX@newark.rutgers.edu).

**For Absence Verification:** The Office of the Dean of Students can provide assistance for absences related to religious observance, emergency or unavoidable conflict (e.g., illness, personal or family emergency, etc.). Students should refer to [University Policy 10.2.7](#) for information about expectations and responsibilities. The Office of the Dean of Students can be contacted by calling (973) 353-5063 or emailing [deanofstudents@newark.rutgers.edu](mailto:deanofstudents@newark.rutgers.edu).

**For Individuals with temporary conditions/injuries:** The Office of the Dean of Students can assist students who are experiencing a temporary condition or injury (e.g., broken or sprained limbs, concussions, or recovery from surgery). Students experiencing a temporary condition or injury should submit a request using the following link: <https://temporaryconditions.rutgers.edu>.

**For English as a Second Language (ESL):** The Program in American Language Studies (PALS) can support students experiencing difficulty in courses due to English as a Second Language (ESL) and can be reached by emailing [PALS@newark.rutgers.edu](mailto:PALS@newark.rutgers.edu) to discuss potential supports.

**For Gender or Sex-Based Discrimination or Harassment:** The Office of Title IX and ADA Compliance can assist students who are experiencing any form of gender or sex-based discrimination or harassment, including sexual assault, sexual harassment, relationship violence, or stalking. Students can report an incident to the Office of Title IX and ADA Compliance by calling (973) 353-1906 or emailing [TitleIX@newark.rutgers.edu](mailto:TitleIX@newark.rutgers.edu). Incidents may also be reported by using the following link: [tinyurl.com/RUNReportingForm](https://tinyurl.com/RUNReportingForm). For more information, students should refer to the University's Student Policy Prohibiting Sexual Harassment, Sexual Violence, Relationship Violence, Stalking and Related Misconduct located at <http://compliance.rutgers.edu/title-ix/about-title-ix/title-ix-policies/>.

**For support related to interpersonal violence:** The Office for Violence Prevention and Victim Assistance can provide any student with confidential support. The office is a **confidential resource** and does *not* have an obligation to report information to the University's Title IX Coordinator. Students can contact the office by calling (973) 353-1918 or emailing [run.vpva@rutgers.edu](mailto:run.vpva@rutgers.edu). There is also a confidential text-based line available to students; students can text (973) 339-0734 for support.

**For Crisis and Concerns:** The Campus Awareness Response and Education (CARE) Team works with students in crisis to develop a support plan to address personal situations that might impact their academic performance. Students, faculty and staff may contact the CARE Team by using the following link: [tinyurl.com/RUNCARE](https://tinyurl.com/RUNCARE) or emailing [careteam@rutgers.edu](mailto:careteam@rutgers.edu).

**For Stress, Worry, or Concerns about Well-being:** The Counseling Center has confidential therapists available to support students. Students should reach out to the Counseling Center to schedule an appointment: [counseling@newark.rutgers.edu](mailto:counseling@newark.rutgers.edu) or (973) 353-5805. If you are not quite ready to make an appointment with a therapist but are interested in self-help, check out *TAO at Rutgers-Newark* for an easy, web-based approach to self-care and support: <https://tinyurl.com/RUN-TAO>.

**For emergencies,** call 911 or contact Rutgers University Police Department (RUPD) by calling (973) 353-5111.

#### ☐ Learning Resources:

- Rutgers Learning Center (tutoring services)  
Room 140, Bradley Hall  
(973) 353-5608  
<https://sasn.rutgers.edu/student-support/tutoring-academic-support/learning-center>
- Writing Center (tutoring and writing workshops)  
Room 126, Conklin Hall  
(973) 353-5847  
nwc@rutgers.edu  
<https://sasn.rutgers.edu/student-support/tutoring-academic-support/writing-center>

### **Responsible behavior and commitment:**

1. **Absences:** Per the University's Course Attendance policy (10.2.7), students are responsible for communicating with their instructors regarding absences. The Division of Student Affairs is available to verify extended absences: (973) 353-5063 or [DeanofStudents@newark.rutgers.edu](mailto:DeanofStudents@newark.rutgers.edu).

2. Regular attendance is the minimum demonstration of responsibility and commitment on your part. You will have one week since the exam is returned to check any grading errors, please contact the instructor for corrections. After one week, the exam score is finalized and recorded as it is.

3. **In case of inclement weather, students should find out on their own whether the University will be closed.**

**Scheduled exams will NOT be cancelled if the University does not cancel class.**

4. All students must have a valid Rutgers e-mail account. **Class-related information will be sent only to students Rutgers e-mails. Students are responsible for checking their Rutgers e-mails so that important class-related information will not be missed.**

## **Tentative lecture outline**

***Tentative*** lecture outline, the exact topics covered on any given day may vary

Week	Date	Chap	Topic
1	1/18-1/21	10	Liquids and Solids
2	1/24-1/28	10 & 11	Solutions and Colloids
3	1/31-2/4	11	Solutions
4	2/7-2/11	12	Kinetics
	<b>2/09/22 (Wednesday)</b>		<b>Exam 1</b>
5	2/14-2/18	12	Kinetics
6	2/21-2/25	12 & 13	Kinetics & Equilibrium
7	2/28-3/4	13	Equilibrium
8	3/7-3/11	14	Acid-Base Equilibria
	<b>3/09/22 (Wednesday)</b>		<b>Exam 2</b>
	<b>3/12-3/20</b>		<b>Spring Recess</b>
9	3/21-3/25	14	Acid-Base Equilibria
10	3/28-4/1	14 & 15	Acid-Base Equilibria & Equilibria of other Reactions
11	4/4-4/8	15	Equilibria of other Reactions
12	4/11-4/15	16	Thermodynamics
	<b>4/13/22 (Wednesday)</b>		<b>Exam 3</b>
13	4/18-4/22	16 & 17	Thermodynamics & Electrochemistry
14	4/25-4/29	17	Electrochemistry
15	5/2		Last class
	<b>5/11/22(Wednesday)</b>		<b>FINAL EXAM (starts at 11:45AM)</b>

**The instructor reserves the right to change the syllabus at any time. All changes will be announced in class and a new syllabus will be electronically available on Canvas. If you are enrolled in this class past the add/drop day you are subject to all rules in this syllabus.**