

## Chemistry 161 – General Chemistry I

This course covers the first semester of the general chemistry curriculum. A goal of the course is to develop a deep understanding of underpinning chemistry concepts in order to apply them to practical problems.

The links below can be useful to reach the subsections of the syllabus:

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### Course Information

Course Number: 01:160:161

Semester: Fall 2020

Course Portal: Canvas <https://tlt.rutgers.edu/canvas>

(Links to an external site.)

Text book: “Chemistry: Structure and Properties”, 2nd Edition, by Nivaldo Tro.

ISBN-13: 978-0-13-429393-6

### Instructors, Lecture and Office Hours:

The course sections are distributed in 5 lectures according to the information listed below. Four of these lecture sections are given on Monday, Wednesday, Thursday for 55 minutes; a fifth section is given on Monday and Wednesday evenings for 80 minutes. Each lecture section is associated to a 55-minute recitation. All lectures will be delivered synchronously on Zoom, and attendance and participation is required.

Sec. 01-10, OS: MWTh 1:55-2:50 PM

Lecturer: Prof. Francesca Guerra [francesca.guerra@rutgers.edu](mailto:francesca.guerra@rutgers.edu)

Office hour: MW 3:00-4:00 PM

Sec. 16-25: MWTh 11:10 AM-12:05 PM

Lecturer: Prof. Anna Kornienko [akern@chem.rutgers.edu](mailto:akern@chem.rutgers.edu)

Office hour: WTh 12:30-1:30 PM

Sec. 31-43: MW 6:40-8:00 PM<sup>[SEP]</sup>  
Lecturer: Prof. Paul Kimmel pkimmel@chem.rutgers.edu<sup>[SEP]</sup>  
Office hour: MW 5:00-6:00 PM

Sec. 46-57: MWTh 12:15-1:10 PM<sup>[SEP]</sup>  
Lecturer: Prof. Bryan Langowski loki@chem.rutgers.edu<sup>[SEP]</sup>  
Office hour: M, 1:30-3:30 PM; Th, 1:30-2:30 PM

Sec. 61-68: MWTh 9:30-10:25 AM<sup>[SEP]</sup>  
Lecturer: Prof. Paul Kimmel pkimmel@chem.rutgers.edu<sup>[SEP]</sup>  
Office hour: MW 8:00-9:00 AM

## Learning Goals

### Core SAS Curriculum Learning Goals Met by this Course

- Understand and apply basic principles and concepts in the physical or biological sciences.
- Explain and be able to assess the relationship among assumptions, method, evidence, arguments, and theory in scientific analysis.
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### Department Learning Goals Met by this Course

By the end of this course, students will be able to draw upon:

- relevant scientific models
  - representations at the macroscopic, submicroscopic (small particle), and symbolic levels—including mathematical formulae
  - qualitative and quantitative reasoning skills
- ...to demonstrate their understanding (at honors level) that:
- 1 “Atoms: Matter consists of atoms that have internal structures that dictate their chemical and physical behavior.”
  - 2 “Bonding: Atoms interact via electrostatic forces to form chemical bonds.”
  - 3 “Structure and Function: Chemical compounds have geometric structures that influence their chemical and physical behaviors.”
  - 4 “Intermolecular Interactions: Intermolecular forces—electrostatic forces between molecules—dictate the physical behavior of matter.”
  - 5 “Chemical Reactions: Matter changes, forming products that have new chemical and physical properties.”
  - 6 “Thermodynamics: Energy is the key currency of chemical reactions in molecular-scale systems as well as macroscopic systems.”
  - 7 “Measurement and Data: Chemistry is generally advanced via experimental observations.”
  - 8 “Visualization: Chemistry constructs meaning interchangeably at the particulate and macroscopic levels.

## **Canvas Website**

All communication to the students will be occur through the Canvas website:

<https://canvas.rutgers.edu>

- You should login to this website using your Rutgers netID and password. Once on Canvas, click “courses” and then Chem 161 Fall 2020 which brings you to the course site.

Course announcements can be seen on Canvas, using the “announcements” tab. Instructors will routinely use Canvas to post announcements. You must adjust Canvas settings to make sure that these announcements will automatically be sent to you by Rutgers email. Click on account tab (upper left) then click on notifications. Look at the “announcement” line in the Course Activity chart and in the “email address” click on the left side to be sure there’s a green checkmark. This green checkmark on the left side means that all announcements will be immediately sent to you by Rutgers email.

The website is organized in weekly modules, each listing appropriate information, resources and deadlines for that week.

Lecture notes, as well as recordings of the zoom lectures will be made available on Canvas.

## **Course schedule**

The “General Course Information” module on Canvas contains the course schedule, listing the planned topics covered in each lecture, along with the corresponding section of the textbook and the suggested textbook problems associated with those topics. There are 2 files. The "day" schedule covers the 55-minute lecture sections, and the "evening" schedule covers the 80-minute lecture sections taught in the evening. Overall, both schedules are identical in coverage, except that the lessons are divided into 80 minute segments for the evening schedule and 55 minute segments for the day one.

## **Textbook**

The textbook for this course is Rutgers Custom Edition of “Chemistry: Structure and Properties”, Second Edition, by Nivaldo Tro. Lecture material and suggested practice problems originate in this book. The textbook is available online as an e-book at <https://www.vitalsource.com/products/chemistry-nivaldo-j-tro-v9780134551326> Some inexpensive rental deals are available on Amazon.

When choosing how to obtain the textbook, keep in consideration that the same book is used in Chem162 the following semester.

## **Recitation–Chemistry Interactive Problem-solving Sessions (ChIPS)**

Recitation sections are 55 minutes long and are designed for smaller groups in which students can ask questions, and more easily converse with the instructor than would be possible in a large lecture. Recitations are used to go over problems and explain material that is covered during the lectures.

Recitation sections will be held online and can be accessed through the website <https://my.elearning.rutgers.edu>

. Each lecture section is assigned to a particular time slot for a recitation. The online recitation for a particular lecture section is the Chem 161 class meeting listed on the

schedule of classes that does not match the lecture times. You should plan on participating in your online recitation during that time slot. The schedule of all 161 online recitations sections can be found in the file “161 Recitation Policies and Schedule Fall 2020.”

### **Active Learning Workshop**

During the first week of class, students will be given the opportunity to apply for participation in a different version of recitation. Details about this application will be explained during the first lecture and will be posted in an announcement on Canvas. Active learning workshops (ALW) are 80 minutes long. In this ALW section, recitations will emphasize collaborative learning, and will be given on Tuesdays from 9:50 AM to 11:10 AM and 11:30 AM to 12:50 PM. On Zoom, students will be assigned “breakout rooms” in which a small group will work together to solve problems. If more than the maximum number apply, students will be chosen randomly from the application pool. Students who apply should be willing to actively take part in group work, and have no course conflict with the recitation times.

The survey to apply/opt out to ALW can be completed following the link :

[https://rutgers.ca1.qualtrics.com/jfe/form/SV\\_5stCFtfiIRapN89](https://rutgers.ca1.qualtrics.com/jfe/form/SV_5stCFtfiIRapN89)

All students must fill out this survey, irrespective of their interest in ALW.

### **eLearning Online Homework**

Online homework will be assigned through the website <https://my.elearning.rutgers.edu> every week, with the exception for the weeks of the midterm exams. In order to access it, login using your netid and password.

Every week - with the exception of the weeks of midterm exams - two type of assignments we be released :

- 1 A practice assignment - it is not graded and will be available until the end of the semester. You can access it as many times as you want. One purpose of the weekly practice assignment is to prepare you for the weekly quiz (see below), and thus this assignment should be done BEFORE the quiz.
- 2 Two graded and timed quizzes. Students will have ONE ATTEMPT to complete each of these quizzes and once they start they have to complete it within 30 minutes. In the first quiz each question is worth 10 points, while in the second quiz each question is worth 5 points. The points scored on the the second quiz will be used to supplement questions missed in the first quiz. See the scoring example below, where Q1a and Q1b indicate the first and second timed quizzes, respectively.

Question	Q1a	Q1b	Points per question
1.	10	5	10
2.	10	0	10
3.	0	5	5
4.	0	0	0
5.	10	5	10
6.	0	5	5
7.	10	0	10
Total score for the week			50/70
Percent score for the week			71.4%

Quizzes will be released on Thursdays at 6:00 pm and will be due the following Sunday at 6:00 pm (Eastern Time Zone).

### Grading

Grades are based on an overall percentage score (0-100) determined from three midterm exams, a final exam, and online quizzes according to the distribution shown below.

	Percentage of total grade
Three midterm exams	36% (3 × 12)
Final exam	24%
Online Quizzes	40%
Total	100%

There are no grade curves in the class – grades are assigned based on the overall percentage score according to a final scale to be decided at the end of the course. An approximate idea of the grading scale would be as follows: A ( $\geq 90\%$ ); B (80-89%); C (65-79%); D (55-64%); F ( $< 55\%$ ).

### Poor Grades on First Exam

If a student performs poorly on the first exam, we will be offering a path that allows students to drop this course without penalty, replacing it with a 2-credit preparatory course which starts only after the first exam is given. Details about this route will be provided after the first exam is given.

Transfer to the 2-credit course is optional. However, past statistics show that if students do very poorly on the first exam, there is little chance of significant improvement in the course. For that reason, students who get  $\leq 40\%$  on the first exam will be strongly encouraged to transfer to the 2-credit preparatory course.

### Attendance in Lecture and Recitation

Lecture and recitation attendance will be checked through the polling questions. You are expected to participate in the polling.

### **If You Need Extra Help**

Prepare for each recitation section by doing the suggested problems in the syllabus, and having questions ready for the recitation instructor.

Office hours for all the lecturers and recitation instructors will be posted on Canvas by the end of the first week of class. You can feel free to go to the office hour of any lecturer or recitation instructor. All lecturers and recitation instructors are committed to help you achieve success in the class.

The four Learning Center locations are closed until further notice but have a virtual help desk, [https://rlc.rutgers.edu/help\\_desk](https://rlc.rutgers.edu/help_desk) to help students navigate their courses and connect with support services. They have also created a guide for successful online learning, <https://rlc.rutgers.edu/succeedonline>

For help with Rutgers libraries and computer labs, please check their website at: <https://oit-nb.rutgers.edu/labs>

### **Disabilities Services**

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability should contact the office of Disability Services at <https://ods.rutgers.edu> or telephone 848 445-6800.

Once you receive a Letter of Accommodations, please submit it to the course administrator as soon as possible.

Additional information can be found here: <https://ods.rutgers.edu/students/receiving-accommodations-online>

### **Academic Integrity**

Students are expected to adhere to the university policies on academic integrity and student conduct in all assignments, assessments and other matters regarding this course.

These policies can be found online: <http://studentconduct.rutgers.edu/academic-integrity/>

Use of external sources to obtain solutions to homework assignments or exams is cheating and a violation of the University Academic Integrity policy.

Cheating in the course may result in penalties ranging from a zero on an assignment to an F for the course, or expulsion from the University. Posting of homework assignments, exams, recorded lectures, or other lecture materials to external sites without the permission of the instructor is a violation of copyright and constitutes a facilitation of dishonesty, which may result in the same penalties as explicit cheating.

#### **Intellectual Property**

Lectures and materials utilized in this course, including but not limited to videocasts, podcasts, visual presentations, assessments, and assignments, are protected by United States copyright laws as well as Rutgers University policy.

The instructors of this course possess sole copyright ownership. Students are permitted to take notes for personal use or to provide to a classmate also currently enrolled in this course. Under no other circumstances is distribution of recorded or written materials associated with this course permitted to any internet site or similar information-sharing platform without my express written consent. Doing so is a violation of the university's

## Contact Information

Course Coordinator: Darrin York	york@chem.rutgers.edu
Course Administrator: Paul Kimmel	pkimmel@chem.rutgers.edu
ChIPS Coordinator: Bryan Langowski	loki@chem.rutgers.edu
Online Homework Coordinator: Francesca Guerra	francesca.guerra@rutgers.edu
Study Strategies and Online Office Hours: Marc Muniz	mnm111@chem.rutgers.edu