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### CHMY 121N.00: Introduction to General Chemistry

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# CHMY 121N 00- Introduction to General Chemistry

## Spring 2022

### Instructor Information

**Instructor:** Kimberly Stanek  
**Email:** kimberly.stanek@umontana.edu  
**Office:** Chemistry 206  
**Office Hours:** TTh 9:00 – 11:00 AM

### Course Information

#### Prerequisite

The ability to use algebra: rearrange equations, work with fractions, and be able to calculate logs and exponents. If your algebra skills are weak, please master them prior to attempting CHMY 121N. You should be eligible to enroll in MATH 117 or higher to satisfy the math prerequisites for this course.

Mastering Chemistry (included with your tuition) has Mathematical Concept refresher tutorials including interpreting graphs, dimensional analysis, inserting numbers into equations, solving linear equations, significant figures, and introduction to logarithms. Make sure you are comfortable with all these concepts and operations.

#### Course Description

CHMY 121N is for students who need a working knowledge of chemistry for careers in fields such as forestry, resource management, wildlife biology, botany, zoology, nursing, medical technology, physical therapy, athletic training, exercise science, nutrition, forensic anthropology and environmental studies. It provides a foundation of chemical principles with "real world" examples with environmental, physiological or medical implications. The course develops these skills in chemistry: physical measurements, atomic and molecular theory, nuclear chemistry, chemical bonding, chemical reactions (precipitation, acid/base and redox), states of matter, and aqueous solution chemistry. In addition, you will gain experience with analytical thinking and quantitative problem solving.

#### Required Materials

##### 1. Text Book

*Fundamentals of General, Organic and Biological Chemistry. 8th Edition* by McMurry, Ballantine, Hoeger and Person, Pearson Education Inc., 2017.

- A loose-leaf paper copy of the textbook is also available in the University of Montana Bookstore for a deeply discounted rate or directly through Pearson (with free shipping) for \$44.99.
- CHMY 121 is included in the bookstore's Inclusive Access Program. This gives you access to your required course materials, including an e-copy of the textbook, by the first day of class at the discounted rate the bookstore has negotiated on your behalf. Your student account has already been charged this discounted rate.
- If for any reason you decide to purchase your materials elsewhere you can opt-out of this program by the add/drop deadline (February 7<sup>th</sup>) and will receive a refund to your student account.

## *2. Mastering Chemistry plus online homework.*

This is included through the bookstore's Inclusive Access Program. You will need to register as a student in the course to access the homework. Everyone in the class has access to this AT NO ADDITIONAL CHARGE unless you decided to opt-out of the bookstore's Inclusive Access Program. Those students and ONLY THOSE STUDENTS will need to purchase an access code through [www.pearson.com/mastering](http://www.pearson.com/mastering) and register for the course.

- [Pearson Mastering Homework Website Link](#)
- Course ID: stanek25853
- Course name: CHMY 121 Spring 2022

## *3. Scientific Calculator*

You will need a NON-programmable, scientific calculator that can handle logarithms and exponents. (Graphing calculators are **not** permitted.)

## **Lecture**

Lecture meets MWF 9 AM – 9:50 AM in Urey Lecture Hall.

Each regular lecture will be used to introduce new material and to work on problems in groups. A Zoom link will be provided for students that are unable to attend lecture for COVID-19 related reasons to join remotely. All lectures will be recorded and posted to Moodle.

A tentative lecture schedule is given at the end of the syllabus.

## **Recitations**

Recitations are held on Mondays and Tuesdays. These are a scheduled component of the class. Please go to the section in which you are officially registered. You can find your recitation section's meeting time and location on your CyberBear account.

### *What Is Recitation?*

The recitation exercises are open-book graded worksheets that will be administered during the recitation. (Please bring class notes and your calculator to your recitation section). Many recitations use searchable on-line content this semester so bring a wi-fi accessible device. You must turn in your exercise to your TA before leaving recitation.

### *Recitation Grading*

There will be 13 recitation worksheets each worth 10 points, and the lowest 3 grades will be dropped. 100 points on the recitation exercises is considered a perfect score. It is possible to achieve a total of 15 additional bonus points for correctly completing all recitation assignments.

### *Missed Recitations*

In the case of unavoidable absence (military service, jury duty, illness with Dr.'s note and other unavoidable events), please schedule with your TA to complete the recitation in their office hours within two weeks. Recitations are not take-home homework – they are to be completed during class with a TA.

## Technology Requirements

- Students are expected to be able to access Zoom and Moodle and download class materials.
  - Class materials will be in Microsoft word, powerpoint, and PDF formats.
- Online homework will need to be completed on a computer.
  - Computers are available in library, computer labs ([UM Computer Labs](#)), and can be rented from the library.
  - Students are expected to have a “back-up plan” if their personal computer becomes compromised.

### *Moodle*

All students must be able to access and navigate the UM Moodle platform. You can login to Moodle using your NetID and password at the following site: [UM Moodle Login Page](#)

### *Zoom*

Students should all be able to access and use their University of Montana Zoom account. Even in-person students should make sure they can use their account in the event that cannot attend in-person classed. You can login to your zoom account at the following site: [UM Zoom Login Page](#)

### *Technical Support*

- For questions regarding your NetID or password, UMConnect email account, or for technical computer assistance:
  - Call the IT Central Help Desk at (406) 243-HELP (4357), 8am - 5pm, Monday-Friday
  - Email: [itcentral@umontana.edu](mailto:itcentral@umontana.edu).
- For technical support for UOnline and Moodle:
  - Call the UOnline Support Desk, 8am - 5pm, Monday through Friday at (406) 243-4999
  - Email: [umonline-help@umontana.edu](mailto:umonline-help@umontana.edu).
- Links to other technical support resources for students can be found at the following link: [UM IT Link](#)

## Online Homework (Mastering Chemistry)

The online homework is required and will be graded. There are 12 online homework assignments. Due dates will be posted as we progress through lecture. It is good practice to work on the homework assignment that covers the material before each lecture if possible so that you are prepared to go to the lecture with questions. The homework must be submitted on time in order to receive full credit for the assignment. Each homework assignment is worth 10 points, and the lowest 2 scores will be dropped. If the homework is not completed by the due date a penalty of 5% will apply to that assignment for up to two weeks. Completion of online homework is strongly associated with success in the class, and timely completion is strongly encouraged. Similar to recitation, the dropped homework scores will be added to your grade as extra credit. Therefore, it is possible to achieve a total of 10 more additional bonus points for correctly completing all homework assignments.

## Moodle Quizzes

Throughout the semester, several Moodle quizzes will be administered during the lecture period to encourage attendance and provide additional preparation for the midterms. These quizzes will consist of 4-5 multiple choice questions and timed at two minutes per question. Completion of these quizzes is optional, but students can receive up to 15 points extra credit for completion of all the Moodle quizzes.

## Midterm Exams

**Midterm exams will be in-person.** Four midterm exams will be given on dates shown on the calendar (see below). Each midterm will cover the material discussed during the prior 8-9 lectures. All exams will be multiple choice graded by the University's Scantron System. You will need a small scantron form and number two pencils for all exams. The "small red scantron" forms can be purchased at the bookstore and other locations around campus. All exams are closed book exams. NO electronic devices apart from your non-programmable scientific calculator are permitted during exams. Your books, notes, computers, cell phones, phone watches, and all wi-fi enabled devices must not be accessible during the exam which usually means zipped in your backpack.

*Makeup Exams and Grade Replacement by Final.*

**There are NO make-up exams.** If you miss an exam **for any reason** (illness, military duty, death in the family, field trip, etc.) your grade for that mid-term will be replaced by your final exam grade. **Only one replacement grade** will be allowed per semester. Take every mid-term seriously – they are a scheduled part of the class. Due to this policy, students are often tempted to take one mid-term less seriously than others only to find they need their one make up later due to unforeseen circumstances.

## Final Exam (Mandatory)

The final exam is given on the date and time specified by the Registrar: **Wednesday, May 11th from 10:10 am – 12:10 pm**. The final exam is a comprehensive exam that will cover all of the material addressed in class. The exam covers 12 questions per mid-term plus 2 more questions not covered in the mid-terms – for a total of 50 questions. The final is mandatory; you will be assigned a grade of F for the course if you do not take the final exam, regardless of your point total prior to the final.

## Assessment and Grades

### *Assignment Point Values*

<i>Assignments</i>	<i>Points Each</i>	<i>Total Points</i>
13 Recitations (3 dropped)	10 points each	100 points
12 Homeworks (2 dropped)	10 points each	100 points
4 Midterm Exams	100 points each	400 points
1 Final Exam	200 points	200 points
<b>Course Total</b>		800 points

### *Points to Letter Grade Conversion*

<i>Grade</i>	<i>Point Range</i>
A	740 – 800
A-	720 – 739
B+	696 – 719
B	664 – 695
B-	640 – 663
C+	616 – 639
C	584 – 615
C-	560 – 583
D+	536 – 559
D	504 – 535
D-	480 – 534
F	0 – 479

A grade of CR for those using CR/NCR option will require a total of 480 points.

## **Additional Information**

### **Study Time**

A standard formula used in colleges and universities is to allow for two hours study time for each hour of lecture. Given that this is a four-credit course, there are three scheduled lecture hours per week plus one recitation per week. Therefore, eight hours per week outside of class, for a total of twelve hours per week should be devoted to the course. (A standard load of 15 credits results in a 45-hour school week.) This means that an "average" student should spend twelve hours per week working on this course. Students who expect higher than average grades should expect to spend a higher-than-average amount of time studying for the course.

### **Dropping the Course**

Registration dates are set by the registrar's office: [UM 2022 Registration Dates](#)

Some important dates are given below:

- February 7<sup>th</sup> by 5:00 PM is the last day to drop the class with full refund and without W on your transcript. Also, this is the last day to switch to Audit.
- March 29<sup>th</sup> by 5:00 PM is the last day to drop with the signatures of your advisor and the instructor with W appearing on your transcript. (After this date, a WP/WF is given that indicates your current grade in the course)

### **Disabilities**

Students with disabilities are strongly encouraged to contact the Office of Disability Equity (ODE) in the Lommasson Center room 154, phone (406) 243-4216. Any student in this course with disability, which may prevent the student from fully demonstrating his or her abilities, should contact the instructor and ODE as soon as possible so necessary accommodations can be discussed to ensure full participation. It is the student's responsibility to contact the course instructor to notify them of any accommodations they require.

### **Academic Honesty**

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the university. All students need to be familiar with the Student Conduct Code, which is enforced in this class. The Current Code is available for review online in PDF or Word format on the Student Affairs website: [Student Affairs Website](#)

### **COVID-19 Information**

Masks are required in the classroom at all times, regardless of vaccination status. To aid in contact-tracing efforts, attendance will be taken at the start of each lecture. If you are experiencing COVID-19 symptoms or are required to quarantine, the lecture may be attended remotely through Zoom. Extra testing accommodations needed due to COVID-19 can be made through the Office of Disability Equity. Updates and more information can be found at the [COVID Operations Plan Website](#).

## CHMY 121N Introduction to General Chemistry - Spring 2022 Calendar

The lecture order is given in the calendar starting with Chapter 1 and moving sequentially through to Chapter 11. Portions of some chapters may be omitted at the instructor's discretion and new material from other sources introduced in Moodle. Dates in the calendar are subject to change based on the pace of lecture. At times we may be slightly ahead or behind the stated chapter. The goal is to cover 2 - 3 chapters before testing.

Date	Activity
Week 1 (1/17 – 1/21)	
Monday/Tuesday	<i>No Recitation</i>
Wednesday, 9/1	Lecture 0: Intro to CHMY 121
Friday, 9/3	Lecture 1: Chapter 1: Matter, Changes, and Reactions
Week 2 (1/24-1/28)	
Monday, 1/24	Lecture 2: Chapter 1: Sci. Notation, Measurements, and Sig. Figs.
Monday/Tuesday	Recitation 1
Wednesday, 1/26	Lecture 3: Chapter 1: Problem Solving and Unit Conversions
Friday, 1/28	Lecture 4: Chapter 1: Energy, Temperature, and Specific Gravity
Week 3 (1/31 – 2/04)	
Monday, 1/31	Lecture 5: Chapter 2: Atomic Theory and Isotopes
Monday/Tuesday	Recitation 2
Wednesday, 2/02	Lecture 6: Chapter 2: The Periodic Table
Friday, 2/04	Lecture 7: Chapter 2: Electron Configurations
Week 4 (2/07 – 2/11)	
Monday, 2/07	Lecture 8: Chapter 3: Formation of Ions
Monday/Tuesday	Recitation 3
Wednesday, 2/09	Lecture 9: Chapter 3: Naming Ions and Ionic Bonds
Friday, 2/11	Lecture 10: Chapter 3: Properties of Ionic Compounds
Week 5 (2/14 – 2/18)	
Monday, 2/14	Midterm 1 Review
Monday/Tuesday	Recitation 4
Wednesday, 2/16	Lecture 11: Chapter 4: Covalent Bonds
Friday, 2/18	<b>Midterm 1: Chapters 1 - 3</b>
Week 6 (2/21-2/25)	
Monday, 2/21	<i>President's Day – No class</i>
Monday/Tuesday	<i>No recitation</i>
Wednesday, 2/23	Lecture 12: Chapter 4: Lewis Structures and VSEPR
Friday, 2/25	Lecture 13: Chapter 4: Electronegativity
Week 7 (2/28 – 3/04)	
Monday, 2/28	Lecture 14: Chapter 5: Chemical Reactions
Monday/Tuesday	Recitation 5
Wednesday, 3/02	Lecture 15: Chapter 5: Precipitation and Redox
Friday, 3/04	Lecture 16: Chapter 5: Practice with Precipitation and Redox

Date	Activity
Week 8 (3/07 – 3/11)	
Monday, 3/07	Lecture 17: Chapter 6: Moles and Mass Conversions
Monday/Tuesday	Recitation 6
Wednesday, 3/09	Lecture 18: Chapter 6: Moles to Mole Conversion
Friday, 3/11	Lecture 19: Chapter 6: Mole and Mass Conversions
Week 9 (3/14 – 3/18)	
Monday, 3/14	Midterm 2 Review
Monday/Tuesday	Recitation 7
Wednesday, 3/16	Lecture 20: Chapter 7: Heat and Reactions (Endo/Exothermic)
Friday, 3/18	<b>Midterm 2: Chapters 4 – 6</b>
Week 10 (3/21 – 3/25)	
	<i>Spring Break – No class</i>
Week 11 (3/28 – 4/01)	
Monday, 3/28	Lecture 21: Chapter 7: Free Energy and Reaction Profiles
Monday/Tuesday	Recitation 8
Wednesday, 3/30	Lecture 22: Chapter 7: Reaction Rates and Le Chatelier's
Friday, 4/01	Lecture 23: Chapter 8: States of Matter and IMFs
Week 12 (4/04 – 4/08)	
Monday, 4/04	Lecture 24: Chapter 8: Gas Laws
Monday/Tuesday	Recitation 9
Wednesday, 4/06	Lecture 25: Chapter 8: Combined Gas Law and Ideal Gas Law
Friday, 4/08	Lecture 26: Chapter 8: Liquids (Vapor Pressure and Phase Changes)
Week 13 (4/11 – 4/15)	
Monday, 4/11	Lecture 27: Chapter 9: Solutions and Solubility
Monday/Tuesday	Recitation 10
Wednesday, 4/13	Lecture 28: Chapter 9: Henry's Law and Concentration Units
Friday, 4/15	<b>Midterm 3: Chapters 7 - 8</b>
Week 14 (4/18 – 4/22)	
Monday, 4/18	Lecture 29: Chapter 9: Molarity and Electrolytes
Monday/Tuesday	Recitation 11
Wednesday, 4/20	Lecture 30: Chapter 9: Colligative Properties
Friday, 4/22	Lecture 31: Chapter 10: Acids and Bases (Types and Strength)
Week 15 (4/25 – 4/29)	
Monday, 4/25	Lecture 32: Chapter 10: pH
Monday/Tuesday	Recitation 12
Wednesday, 4/27	Lecture 33: Chapter 10: More pH, Common Reactions
Friday, 4/29	Lecture 34: Chapter 11: Nuclear Chemistry



Date	Activity
Week 16 (5/02 – 5/06)	
Monday, 5/02	<b>Midterm 4: Chapters 9 - 10</b>
Monday/Tuesday	Recitation 13
Wednesday, 5/04	Lecture 35: Chapter 11: Nuclear Chemistry
Friday, 5/06	Final Exam Review
<b>Wednesday, 5/11</b>	<b>Final Exam (10:10 am – 12:10 pm)</b>