

# CHM2045 GENERAL CHEMISTRY I

SPRING 2025; TUESDAY PERIOD 5/THURSDAY PERIOD 5-6.

Class numbers: 18985, 18986, 18987, 18988, 18989, 18991

**Welcome!!!**

## TABLE OF CONTENTS

Instructor Information .....	3
Teaching Assistants .....	3
Course delivery/meeting times .....	3
Course fees .....	3
General Information .....	3
prerequisites .....	3
course Description and goals .....	3
Student Learning Outcomes .....	4
First Days .....	4
General Education Objectives and Learning Outcomes .....	4
required & recommended Course Materials .....	5
Online Homework (Required, no charge) .....	5
textbook (Recommended) .....	5
Calculator (required, must purchase) .....	6
Iclicker (Required, no charge) .....	6
course communications .....	6
General Questions .....	6
Private or Grade-Related Questions .....	6
course policies .....	6
assignment due dates .....	6
lecture Video assignments .....	6
discussion sessions & worksheets .....	6
homework and quizzes .....	7
iclicker .....	7
canvas homework (optional/for practice) .....	7
exams .....	7
Progress Exam "Average/Replace" Policy .....	7
posted grade disputes .....	7

attendance, extension requests .....	8
WORKLOAD .....	8
Grading.....	8
Grade policy.....	8
University Policies.....	9
students requiring accommodations.....	9
University Policy on Academic Misconduct .....	9
in-class recording .....	10
campus resources .....	10
academic resources .....	10
feedback.....	11
getting help .....	11
inclusive learning environment .....	11
Disclaimer .....	11
detailed tentative Schedule.....	13

**This is a 100% flipped course. All lecture notes should be taken prior to coming to class.**

## INSTRUCTOR INFORMATION

### Instructors

### Email/Office/Phone

### Student Hours

**Dr. Steven Harris**

**Email in Canvas only**

M 11:45 AM-12:35 PM

**Associate Instructional Professor** [steven.harris@ufl.edu](mailto:steven.harris@ufl.edu) (do not use this email unless instructed by professor)

W 3:00-4:00 PM

T&R 10:40-11:30 PM

352-273-3717

All student hours will meet in 308 Leigh Hall

Scott Family Hall, 302A

## TEACHING ASSISTANTS

Grad TAs: Nidhi Kalia - [nidhi.kalia@ufl.edu](mailto:nidhi.kalia@ufl.edu), Akash Surendran – [ak.surendran@ufl.edu](mailto:ak.surendran@ufl.edu),

Muskan Muskan – [muskanm@ufl.edu](mailto:muskanm@ufl.edu), Sarah Troutt - [sarahtroutt@ufl.edu](mailto:sarahtroutt@ufl.edu)

All TA Office hours: Held in the Chemistry Learning Center (CLC), SFH 105. These student hours will be listed on the Canvas home page.

[Broward Teaching Center](#) offers free virtual tutoring assistance. See their website for details.

## COURSE DELIVERY/MEETING TIMES

The course is delivered in a face to face format. Instructors *may* decide to offer Zoom/HyFlex options for lecture times only but are not required to do so. If there is a zoom option, the link will be added to the Canvas home page. Discussion sections are held only in-person only in assigned classrooms at assigned class meeting times. Exams are evening assembly exams (exam dates are listed on the course schedule below), on campus, rooms TBA (rooms are assigned 1 week prior to the exam), periods E2-E3.

## COURSE FEES

Additional Course Fees: \$1.14

## GENERAL INFORMATION

### PREREQUISITES

Please refer to the [Undergraduate Catalog](#) for placement and prerequisite information.

### COURSE DESCRIPTION AND GOALS

The first semester of the CHM 2045/CHM 2045L and CHM 2046/CHM 2046L sequence. Stoichiometry, atomic and molecular structure, the states of matter, reaction rates and equilibria. A minimum grade of C is required to progress to CHM 2046. (P).

This course is designed for students pursuing careers in the sciences or who need a more rigorous presentation of chemical concepts than is offered in an introductory course. Students will engage in problem solving and critical thinking while applying chemical concepts. Topics will include the principles of chemistry including atomic theory, electronic structure, measurement, stoichiometry, bonding, periodicity, thermochemistry, nomenclature, solutions, and the properties of gases.

#### STUDENT LEARNING OUTCOMES

Students will apply the law of conservation of matter and energy.

Students will implement rules of significant numbers to all measurements.

Students will explain the fundamental properties of matter including but not limited to atomic and electronic structure, and periodicity.

Students will apply IUPAC rules of nomenclature.

Students will predict molecular geometry and properties from bonding theories.

Students will predict and explain the products of chemical reactions (e.g. acid-base, oxidation-reduction, precipitation, dissociation).

#### FIRST DAYS

Log into Canvas and access the course. You should check daily for new Announcements and/or emails containing important information. Your instructor has provided information in Canvas on recommended study habits/skills to help you succeed in the course.

#### GENERAL EDUCATION OBJECTIVES AND LEARNING OUTCOMES

Primary General Education Designation: Physical Sciences (P) ([area objectives available here](#))

A minimum grade of C is required for general education credit. Courses intended to satisfy the general education requirement cannot be taken S/U.

Physical science courses provide instruction in the basic concepts, theories and terms of the scientific method in the context of the physical sciences. Courses focus on major scientific developments and their impacts on society, science and the environment, and the relevant processes that govern physical systems. Students will formulate empirically-testable hypotheses derived from the study of physical processes, apply logical reasoning skills through scientific criticism and argument, and apply techniques of discovery and critical thinking to evaluate outcomes of experiments.

In General Chemistry I, these objectives will be met as detailed below.

At the end of this course, students will be expected to have achieved the following learning outcomes in content, communication, and critical thinking:

**Content:** *Students demonstrate competence in the terminology, concepts, theories and methodologies used within the discipline.* Students will acquire a basic knowledge of a variety of chemistry concepts including the

scientific method, stoichiometry, reaction types, thermodynamics, solutions, solids, gases, and chemical bonding. Achievement of this learning outcome will be assessed largely through assigned homework problems, and quizzes and exams.

**Communication:** *Students communicate knowledge, ideas, and reasoning clearly and effectively in written and oral forms appropriate to the discipline.* Students participate in class discussions throughout the semester to reflect on pertinent topics. Achievement of this learning outcome is realized through discussion sessions and/or office hours during which students formulate questions, construct arguments, and use logical reasoning to draw reasonable conclusions.

**Critical Thinking:** *Students analyze information carefully and logically from multiple perspectives, using discipline-specific methods, and develop reasoned solutions to problems.* Students apply mathematical knowledge and reasoning to solve chemical problems. This may entail use of algebra, basic geometry, and graphical analysis. Achievement of this learning outcome is largely assessed via worksheets, assigned homework problems, and quizzes and exams.

## REQUIRED & RECOMMENDED COURSE MATERIALS

### ONLINE HOMEWORK (REQUIRED, NO CHARGE)

We will be using the Pearson Learning – Mastering Chemistry online homework system for regular homework this semester. You will be provided an access code for the homework so there is no need to purchase any further access codes.

The Pearson Learning software comes with the ebook, Chemistry: A Molecular Approach, 6e by Nivaldo Tro.

There are two options for purchasing access to the Recommended Text (information below): **Option 1:** consent to have the purchase price charged to your student account following the directions posted on the course homepage in Canvas; this is a time-limited option after which only Option 2 is available. **Option 2:** purchase an access code for the materials at the UF Bookstore (at a slightly higher price).

To opt in, navigate to: <https://bsd.ufl.edu/allaccess> . Click the “Opt In” tab or view the “View Eligible UF All Access Classes” button. You will be prompted to log in using Gatorlink credentials. Follow the prompt to authorize charges to your student account. The access code will then be provided. Copy the access code to your clipboard. In the Canvas course, click on the Mastering module, and provide the access code when prompted to do so. If you have any questions about the authorization process or refunds contact Included@bsd.ufl.edu.

All other assigned material will be available through Canvas.

### TEXTBOOK (RECOMMENDED)

The referenced/recommended text Chemistry: The Molecular Nature of Matter and Change, 10<sup>th</sup> ed., Silberberg & Amateis (McGraw Hill) is recommended. Students can choose to purchase a traditional textbook or eBook. A paperback version of the text is completely optional. The bookstore may stock paper versions of the text, or you can order one directly through the McGraw Hill website. A paper version is on reserve at the Marston Science Library for reference purposes.

## CALCULATOR (REQUIRED, MUST PURCHASE)

You will require a calculator capable of logarithmic functions. For exams, the calculator must be non-graphing and non-programmable. The TI-36 has quadratic functions which may be helpful in chm2046.

## IClicker (REQUIRED, NO CHARGE)

You will use iClicker to answer in-class clicker questions. Access is provided free of charge to students. An access code will be sent in the first week of the semester to all students via canvas. You will use your own electronic device (laptop, phone, tablet, etc.) during class to answer questions via iClicker.

## COURSE COMMUNICATIONS

### GENERAL QUESTIONS

General course questions should be posed to your instructor during office hours, or to TAs during their office hours or during discussion sessions.

### PRIVATE OR GRADE-RELATED QUESTIONS

Direct these to your instructor via the mail function in Canvas. Do not email outside of Canvas to your instructor's external email address – we aren't permitted to discuss grade related questions outside of Canvas. You will be asked to resend the query through Canvas. Instructor response time to email queries is <48 h during the workweek, or the first business day for emails received Friday or over the weekend.

## COURSE POLICIES

### ASSIGNMENT DUE DATES

All due dates for assignments are clearly posted in the course assignments and syllabus tab of the Canvas page and reflect the most up-to-date information. All assignments must be completed by the stated due date and time for credit. A Dean of Students note verifying documentation of illness or personal matter must be provided for at least five of the seven days of the week of the assignments' deadline for accommodations to be considered.

### LECTURE VIDEO ASSIGNMENTS

This is a flipped course and you are expected to take notes on the assigned lecture videos and complete the lecture video questions in preparation for each class day. The length of each video is <45 minutes but may require pausing to take thorough notes. These assignments are based on the reading in the required textbook and on the sample problems therein. These assignments will be posted on Canvas under the assignments tab and are due prior to class. You will have multiple attempts to successfully answer the lecture video questions. Three of these assignment grades are dropped from your overall course grade.

Each lecture is accompanied by an optional pre-lecture assignment. These assignments give additional practice to help prepare students for the in-class iClicker problems (see below)

### DISCUSSION SESSIONS & WORKSHEETS

Discussion classes meet per your scheduled day/time, and attendance is mandatory. A total of 10 points can be earned each week by attending your discussion class (5 points) and correctly answering the worksheet questions in Canvas (5 points). Open/close times of the Canvas quiz varies by day of discussion. The paper worksheets will be posted on Canvas in advance, and you may start working on it before you come to discussion. Grade discrepancies should be addressed with your graduate TA within a week of grades posting to Canvas. One assignment will be dropped from this category before calculating your final grade.

## HOMEWORK AND QUIZZES

HW assignments are due once per chapter. You have multiple attempts at each homework assignment, with the highest score counting for credit. A chapter quiz is due once the material for the chapter has been covered. Quizzes are timed, with one attempt. One quiz and one homework assignment is dropped from your overall course grade.

## IClicker

IClicker is a classroom response system used for in-class participation during lectures. Each class session will contain between 3-8 problems to help students prepare for the exams. Up to 6 iClicker points are dropped before calculating the final iClicker score for each student.

## CANVAS HOMEWORK (OPTIONAL/FOR PRACTICE)

Several optional homework assignments are available for each chapter to help you understand the material. The homework is posted in Canvas. You have multiple attempts to successfully answer the questions. These are not worth any points.

You should also work on numerous End-of-Chapter questions (EOCs).

## EXAMS

Exams occur in the evenings, periods E2-E3, in exam rooms TBA. Exam Dates are provided in the schedule at the end of this syllabus document. You are permitted use of a non-graphing non-programmable scientific calculator. Notes, cell phones or other electronic devices are not permitted. Scantrons, formula sheet, and blank paper are provided.

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## PROGRESS EXAM "AVERAGE/REPLACE" POLICY

This applies to all students. No progress exam score will be dropped for any reason. To alleviate the stress of potential issues that do not fall under officially sanctioned absences, we have incorporated an "average/replace" policy: the lowest of the three progress exams will be replaced by the average of the three progress exams. This policy helps to minimize the impact of a single poor performance (it will not disappear, but will be minimized). For example, if a student scores the following on their three progress exams: 0%, 65%, 80%, the 0% would be replaced with the average of 0, 65 and 80, which is 48%. That is a much better score than a 0.

A significant penalty is assessed for student failure to bubble in the correct form code on the scantron or for any student that completes their scantron with an ink pen.

## POSTED GRADE DISPUTES

Should a student wish to dispute any grade received in this class, the dispute must be in writing (via Canvas e-mail to *your* instructor) and submitted within one week of the grade being posted to Canvas. After one week has passed from when the grade was posted and the student made aware of the posting of the grade(s) to Canvas, the instructor considers those grades final.

## ATTENDANCE, EXTENSION REQUESTS

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: <https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>

Exam absences will be handled in accordance with official UF academic regulations. For more information, see <https://catalog.ufl.edu/UGRD/academic-regulations/> . See below for further clarification for two different types of situations.

(1) Conflicts with other events: acceptable reasons may include religious holidays, military obligations, special curricular requirements (e.g., attending professional conferences), or participation in official UF-sanctioned activities such as athletic competitions, etc. For more information on such absences see the official UF Policy at <https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/#absencetext> ). If you must be absent for an exam due to a documented and approved conflict known in advance, you must e-mail your instructor (within Canvas) the documentation at least one week prior to the scheduled exam and an early conflict exam will be scheduled for you.

(2) Missing an exam due to an emergency or sudden illness: If you are absent for an exam due to an unpredicted documented medical reason or family emergency, you must contact the instructor as soon as possible, and you may be asked to have your excuse verified by the Dean of Students Office (DSO). Your instructor will follow UF academic regulations in evaluating the notification and/or documentation received from you or from the DSO on your behalf. Once your instructor is satisfied with the validity of your exam absence a make-up exam will be scheduled after a reasonable amount of time, i.e., before the end of the semester. If your documentation is deemed insufficient to excuse your absence you will receive a zero on the missed exam.

## WORKLOAD

As a Carnegie I, research-intensive university, UF is required by federal law to assign at least 2 hours of work per week outside of class for every contact hour. Work done in these hours may include reading/viewing assigned material and doing explicitly assigned individual or group work, as well as reviewing notes from class, synthesizing information in advance of exams or papers, and other self-determined study tasks.

## GRADING

### GRADE POLICY

There is no extra credit available for this course. Grades are not rounded at the end of term. Exam grades or course grades are not curved. Current UF grading policies for assigning grade points can be found in [the catalog](#).

Assignments weights are as follows:



Assignment Group	Weight %
Progress Exams	60%
Final Cumulative Exam	20%
Homework	4%
Quizzes	5%
iClicker	1%
Lecture Video Assignments	6%
Discussion/Worksheets	4%
<b>TOTAL</b>	<b>100%</b>

Grade scale (note: there is no rounding to your score in Canvas):

Letter	A	A-	B+	B	B-	C+	C	D+	D	D-	E
<b>Cutoff</b>	90.0	86.0	83.0	80.0	77.0	73.0	69.0	66.0	63.0	60.0	< 60.0

## UNIVERSITY POLICIES

### STUDENTS REQUIRING ACCOMMODATIONS

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center by visiting <https://disability.ufl.edu/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

### UNIVERSITY POLICY ON ACADEMIC MISCONDUCT

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity." You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida. The following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of

Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/> .”

## IN-CLASS RECORDING

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor. A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session. Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

## CAMPUS RESOURCES

U Matter, We Care: If you or someone you know is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu), 352-392-1575, or visit [U Matter, We Care website](#) to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: Visit the [Counseling and Wellness Center website](#) or call 352-392-1575 for information on crisis services as well as non-crisis services.

Student Health Care Center: Call 352-392-1161 for 24/7 information to help you find the care you need, or visit the [Student Health Care Center website](#).

University Police Department: Visit [UF Police Department website](#) or call 352-392-1111 (or 9-1-1 for emergencies).

UF Health Shands Emergency Room / Trauma Center: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; Visit the [UF Health Emergency Room and Trauma Center website](#).

GatorWell Health Promotion Services: For prevention services focused on optimal wellbeing, including Wellness Coaching for Academic Success, visit the [GatorWell website](#) or call 352-273-4450.

## ACADEMIC RESOURCES

E-learning technical support: Contact the [UF Computing Help Desk](#) at 352-392-4357 or via e-mail at [helpdesk@ufl.edu](mailto:helpdesk@ufl.edu).

[Career Connections Center](#): Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.

[Library Support](#): Various ways to receive assistance with respect to using the libraries or finding resources.

[Teaching Center](#): Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.

[Writing Studio](#): 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints On-Campus: Visit the [Student Honor Code and Student Conduct Code webpage](#) for more information.

On-Line Students Complaints: View the [Distance Learning Student Complaint Process](#).

## FEEDBACK

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

## GETTING HELP

For issues with or technical difficulties with Canvas, contact the UF Help Desk: <https://lss.at.ufl.edu/help.shtml>; (352)-392-HELP.

## INCLUSIVE LEARNING ENVIRONMENT

We embrace the University of Florida's Non-Discrimination Policy, which reads, "The University shall actively promote equal opportunity policies and practices conforming to laws against discrimination. The University is committed to non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinion or affiliations, genetic information and veteran status as protected under the Vietnam Era Veterans' Readjustment Assistance Act." We are committed to fostering an open and inclusive classroom and laboratory environment in our College, where every student, guest instructor and contributor feels valued. If you have questions or concerns about your rights and responsibilities for inclusive learning environment, please see your instructor or refer to the Office on Multicultural & Diversity Affairs Website: <http://www.multicultural.ufl.edu/>

## DISCLAIMER

This syllabus represents my current plans and objectives. As we go through the semester, those plans may need to change to enhance the class learning opportunity. Such changes, communicated clearly, are not unusual and should be expected.

The following lecture schedule is tentative, but exam dates will not change. The following list details the order of topics that will be covered in this course:

Chapter 1: Keys to Studying Chemistry

Chapter 2: The Components of Matter

Chapter 3: Stoichiometry of Formulas and Equations

Chapter 4: Three Major Classes of Chemical Reactions

Chapter 5: Gases and the Kinetic Molecular Theory

Chapter 6: Thermochemistry: Energy Flow and Chemical Change

Chapter 7: Quantum Theory and Atomic Structure

Chapter 8: Electron Configuration and Chemical Periodicity

Chapter 9: Models of Chemical Bonding

Chapter 10: The Shapes of Molecules

Chapter 11: Theories of Covalent Bonding

Chapter 12: Intermolecular Forces: Liquids, Solids, and Phase Changes

Chapter 13: The Properties of Mixtures: Solutions and Colloids

Chapter 16: Kinetics: Rates and Mechanisms of Chemical Reactions

## DETAILED TENTATIVE SCHEDULE

**DAILY COURSE SCHEDULE** (the lecture schedule is tentative, but exam dates will not change):

**For Spring 2025**

<b>Class date</b>	<b>Topic</b>	<b>Chapter quiz. Worksheet quiz due dates</b>	<b>Homework (HW), Lecture Video (LV), Worksheet (WS), Prelecture assignment (PLA),</b>	<b>Silberberg 10<sup>th</sup> Chapters, Pages, approximate video length</b>	
Mon 1/13	No discussions				
Tues 1/14	Introduction, Chapter 1 Review		Begin Ch. 1-2 HW Begin WS 1	Ch. 1, Pgs. 3-30, None	
Thurs 1/16	Chapter 2 Review, Naming and dimensional analysis The mole, molecular and empirical formulas			Ch. 1-2, Pgs. 41-79, None Ch. 3.1-2, Pgs. 93-102, 30 mins	
Fri 1/17			Ch. 1-2 HW due		
<b>Mon 1/20</b>	<b>HOLIDAY – no discussion</b>				
Tues 1/21	Empirical formulas, balancing equations	Chapter 1-2 Quiz	PLA and LV ch 3.1-3 WS 1	Ch. 3.2-3, Pgs. 103-112, 35 mins	
Wed 1/22		Worksheet Quiz 1 (Ch. 1-2)			
Thurs 1/23	Reactions and stoichiometry Solution concentration, M, dilutions		PLA and LV ch. 3.4 LVA ch. 4.1	Ch. 3.4, Pgs. 113-124, 30 mins  Ch. 4.1, Pgs. 141-151, 30 mins	
Fri 1/24			Ch. 3 HW due		
Mon 1/27	Discussion over ch 1-3	Ch. 3 Quiz	WS 2		

Tues 1/28	Net ionic equations and precipitation reactions	Worksheet Quiz 2	LV and PLA ch. 4.1-3 PLA	Ch. 4.2-3, Pgs. 152-168, 30 mins	
Wed 1/29					
Thurs 1/30	Acid-base reactions Redox reactions and reversibility		LV ch. 4.4 LV and PLA ch. 4.5-6	Ch. 4.4, Pgs. 169-174, 30 mins  Ch. 4.5-7, Pgs. 176-185, 40 mins	
Fri 1/31			Ch. 4 HW due		
Mon 2/3	Discussion	Ch. 4 Quiz	WS 3		
Tues 2/4	Overview of gases, P, gas laws	Worksheet Quiz 3	LV and PLA ch. 5.1-3	Ch. 5.1-3, Pgs. 201-217, 35 mins	
Wed 2/5					
Thurs 2/6	Rearrangement of ideal gas law KMT and real gases		LV and PLA ch. 5.4 LV and PLA ch. 5.5-6	Ch. 5.4, Pgs. 218-226, 30 mins  Ch. 5.5-6, Pgs. 227-239, 30 mins	
Fri 2/7			Ch. 5 HW due		
Mon 2/10	Discussion and exam review	Ch. 5 Quiz	WS 4		
Tues 2/11	Forms of energy, enthalpy (Ch. 6, not on exam 1)	Worksheet Quiz 4	LV and PLA ch. 6.1-2.	Ch 6.1-2, Pgs. 253-263, 40 mins	
Wed 2/12					
Thurs 2/13	Ch. 1-5 Review				
<b>Thurs 2/13</b>	<b>Exam 1</b>			<b>Cumulative</b>	
Fri 2/14					
Mon 2/17	Discussion		Review Exam 1		

Tues 2/18	Calorimetry: Constant P, constant V, Stoichiometry of thermochemical rxn		LV and PLA ch. 6.3-4	Ch. 6.3-4, Pgs. 264-271, 40 mins	
Wed 2/19		Worksheet quiz 5			
Thurs 2/20	Hess's Law, $\Delta H$ of formation Nature of light		LV and PLA ch. 6.4-6 LV and PLA ch. 7.1	Ch. 6.5-6, Pgs 271-279  Ch. 7.1, Pgs. 291-303, 25 mins	
Fri 2/21			Ch. 6 HW due		
Mon 2/24	Discussion	Ch. 6 Quiz	WS 5		
Tues 2/25 (2 lectures due)	Quantum mechanical model of atom Electron configuration and quantum mechanical model	Worksheet Quiz 5	LV and PLA ch. 7.4 LV ch. 8.1	Ch 7.4, Pgs. 310-317, 25 mins  Ch. 8.1, 328-334, 20 mins	
Wed 2/26			Ch. 7 HW due		
Thurs 2/27	Trends in atomic properties Other trends in atomic properties	Ch. 7 Quiz	LV and PLA ch. 8.1-2 LV and PLA ch. 8.3-4	Ch. 8.23, 335-339, 20 mins  Ch. 8.3-4 Pgs. 340-354, 25 mins	
Fri 2/28			Ch. 8 HW due		
Mon 3/3	Discussion	Ch. 8 Quiz	WS 6 WS 7		
Tues 3/4	Ionic bonding model	Worksheet Quiz 6	LV and PLA ch. 9.1-2	Ch. 9.1-2, Pgs. 363-372, 30 mins	

		Worksheet Quiz 7			
Wed 3/5					
Thurs 3/6	Covalent Bonding Model and bond energy Electronegativity, bond polarity, and metallic bonding		LV and PLA ch. 9.3-4 LV and PLA ch. 9.5-6	Ch. 9.3-4, Pgs. 373-383, 30 mins  Ch. 9.5-6, Pgs. 384-390, 35 mins	
<b>Fri 3/7</b>	<b>Exam 2</b>			<b>cumulative</b>	
Mon 3/10	Discussion	Ch. 9 Quiz	Ch. 9 HW due WS 8 Exam Review		
Tues 3/11	Lewis structures, resonance, formal charge	Worksheet Quiz 8	LV and PLA ch. 10.1	Ch. 10.1, Pgs. 399-411, 35 mins	
Wed 3/12					
Thurs 3/13	VSEPR Molecular shape and polarity		LV and PLA ch. 10.2 LV and PLA ch. 10.3	Ch 10.2, Pgs. 412-422, 30 mins  Ch 10.3, Pgs. 423-426, 35 mins	
Fri 3/14			Ch. 10 HW due		
	<b>Spring Break 3/17 thru 3/21</b>				
Mon 3/24	Discussion	Ch. 10 Quiz	WS 9		
Tues 3/25 (2 lectures due)	Valence bond theory Modes of orbital overlap	Worksheet Quiz 9	LV ch. 11.1 LV and PLA ch. 11.1-2	Ch. 11.1, Pgs. 437-445, 40 mins  Ch. 11.2, Pgs. 446-448, 30 mins	



Wed 3/26					
Thurs 3/27	Molecular orbital theory (MO) Physical states; phase changes, heating curve calculations		LV and PLA ch. 11.3 LV and PLA ch. 12.1-2	Ch. 11.3, Pgs. 449-460, 40 mins  Ch. 12.1-2, Pgs. 467-477, 45 mins	
Fri 3/28			Ch. 11 HW due		
Mon 3/31	Discussion	Ch. 11 Quiz	WS 10		
Tues 4/1	Intermolecular forces	Worksheet quiz 10	LV ch. 12.3	Ch. 12.3, Pgs. 478-485, 35 mins	
Wed 4/2					
Thurs 4/3	Properties of liquid state and uniqueness of water  The solid state: structure, properties, and bonding		LV and PLA ch. 12.3-5 LV and PLA ch. 12.6	Ch. 12.4-5, Pgs. 486-491, 30 mins  Ch. 12.6, Pgs. 492-506, 30 mins	
Fri 4/4			Ch. 12 HW due		
Mon 4/7	Discussion	Ch. 12 Quiz	WS 11		
Tues 4/8	Types of solutions; why substances dissolve	Worksheet Quiz 11	LV and PLA ch. 13.1-3	Ch. 13.1-3, Pgs. 531-546, 30 mins	
<b>Tues 4/8</b>	<b>Exam 3</b>			<b>cumulative</b>	
Wed 4/9					
Thurs 4/10	Solubility as an equilibrium process  Colligative properties, structure and properties of colloids		LV and PLA ch. 13.4-5 LV and PLA ch. 13.6-7	Ch 13.4-5, Pgs. 547-562, 25 mins	

				Ch 13.6-7, Pgs. 563- 566, 30 mins	
Fri 4/11			Ch. 13 HW due		
Mon 4/14	Discussion	Ch. 13 Quiz	WS 12		
Tues 4/15	Chemical kinetics, reaction rate, rate law and components	Worksheet Quiz 12	LV and PLA ch. 16.1-3	Ch. 16.1-3, Pgs. 687- 702, 45 mins	
Wed 4/16					
Thurs 4/17	Integrated rate laws Reaction mechanisms		LV and PLA ch. 16.4 LV and PLA ch. 16.6	Ch. 16.4, Pgs. 703- 710, 45 mins  Ch 16.6, Pgs. 718- 723, 30 mins	
Fri 4/18					
Mon 4/21	Discussion		Worksheet 13		
Tues 4/22	Theories of chemical kinetics and catalysis		LV and PLA ch. 16.5/7	Ch 16.5/7, 711-717, 724-30, 40 mins	
Wed 4/23		Ch. 16 Quiz	Ch. 16 HW due		
Thurs 4/24	Reading Day 1				
Fri 4/25	Reading Day 2				
<b>Mon 4/28</b>	<b>Final exam 7:30 to 9:30 AM</b>		Worksheet 14	<b>cumulative</b>	

\*The topics that will be covered from each chapter will be selective and announced on canvas via an announcement.

**Holidays (no classes):** Monday, January 20th (Martin Luther King Jr. Day), Spring Break (Monday, March 17th through Friday, March 21st), Reading Day 1, (Thursday, April 24<sup>th</sup>)