CHM 2046: General Chemistry II Spring 2021

Instructor: Prof. Yunwei Charles Cao, Leigh Hall 226, Phone:392-9839

Email: email through Canvas only

Lecture hours: M/W/F, Period 5 (11:45 am-12:35 pm) in CLB C130 and online synchronously (HyFlex). A moderator will collect questions from online-learning students during each live lecture.

Zoom office hours: M/W/F, Period 6 (12:50 pm-1:40 pm) via the Zoom platform

Teaching Assistants: Please email through Canvas only

Yang Song,	zoom office hours: M, Period 8, 9, and 10
Jingzhu Shi,	zoom office hours: T, Period 8 and 9, and W, Period 3
Subhadeep Bera,	zoom office hours: T, Period 3 and 5, and F, Period 3

Discussion Sections: via Zoom

On Thursdays, discussion meetings will take place during a scheduled discussion period which is corresponding to the class number your registered.

Disclaimer: The instructor reserves the right to make changes or corrections to this syllabus at any time. Students will be notified when any change is made by an announcement on Canvas.

Description: CHM 2046 and CHM 2046L constitute the second semester of the two-term sequence of General Chemistry, CHM 2045/2045L-2046/2046L. Prerequisite information and credit suitability can be found in the Undergraduate Catalog. 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/ugrad/current/regulations/info/attendance.aspx

Objective: To introduce general chemistry concepts and problem-solving skills and their relationship to advanced topics in science and engineering.

Textbook: 1. "Chemistry: The Molecular Nature of Matter and Change," Silberberg 8th Ed.
2. Any other edition of the Silberberg book.
3. ebook: Students will have the opportunity to "opt-in" to purchase a digital version of the textbook ($46.75 for a 5-year access). During the first week of classes and pay for these materials through their student account. The digital textbook will then be available through RedShelf in the Canvas course. Students who do not choose this option will be able to purchase a print textbook through the UF Bookstore. There is also an eBook copy of the student solutions manual for the textbook, titled CHM 2046-SSM with ISBN 9781307629750 available for purchase here https://create.mheducation.com/shop/ or via the bookstore. Please email julia@chem.ufl.edu if you have textbook questions.

Required Equipment:

1. A computer with an internet connection, a functional webcam, and microphone
2. A handheld mirror (for Honorlock)
3. A non-graphing non-programmable scientific calculator

Audio/Video Presence Policy: Our class sessions (lectures) may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

For discussion sections, the participation portion of your grade for this class will be calculated on the basis of your attendance and your participation in class activities. Since the pedagogical approach of this course depends heavily on student engagement and interaction, you are required, at a minimum, to participate in class activities through the audio function of Zoom. Your video presence is invited as well.

Course Information: The Professor stresses that everything in CHM 2046 goes back to the foundations of chemistry comprised of six core scientific fundamentals: (1) Random Walk, and Walkers: Atoms and Molecules, (2) Conservation Laws of Mass, Energy, and Charge, (3) the Second Law of Thermodynamics, (4) Concentration and pH, (5) Equilibrium and Le Chatelier's Principle, and (6) Electrochemistry—the Spark of Life.

Building up this foundation will not only lead to the success in CHM 2046, but will help you understand yourself, the world around you, and life itself. To be successful, you must attend all lectures, read the assigned text chapters, and complete the **homework problems** and **worksheets**. Your learning progress will be evaluated with **three quizzes**, **three progress exams,** and a **final exam**. Self-discipline and open-minded learning are critical for this course.

Tentative Teaching Schedule:

1.	Random walk and walkers	Review of Chapters 5, 6, and 16:	Week 1
2.	Equilibrium	Chapter 17	Week 2-3
3.	Acid-Base Equilibria	Chapter 18	Week 3-4
4.	Ionic Equilibria in Aqueous Systems	Chapter 19	Week 5-8
5.	Thermodynamics	Chapter 20	Week 9-10
6.	Electrochemistry	Chapter 21	Week 11-12
7.	Origin of Elements of Periodic Table	Chapter 24 and Review of Chapter 8:	Week 13
8.	Transition Metals	Chapter 23	Week 14-15

Important dates:

Quiz 1	Tuesday, Jan. 26	**8:20 pm-9:20 pm**
Exam 1	Tuesday, Feb. 9,	**8:20 pm-10:20 pm**
Quiz 2	Tuesday, Feb. 23	**8:20 pm-9:20 pm**
Exam 2	Wednesday, Mar. 10,	**8:20 pm-10:20 pm**
Quiz 3	Tuesday, Mar. 23	**8:20 pm-9:20 pm**
Exam 3	Wednesday, Apr. 7,	**8:20 pm-10:20 pm**
Final Review	Wednesday, Apr. 21	
Final Exam	Saturday, Apr. 24,	**10:00 am-12:00 pm**

Grades: Grading will be based on 1000 earnable points as follows:

Worksheets: (5 points x10)	50 points
Homework:	100 points
Quizzes: (50 points x 3)	150 points
Progress Exam: (150 points x 3)	450 points
Final Exam (cumulative)	250 points
Total Earnable Points	**1000 points**

For information on UF's Grading Policy, see:
https://registrar.ufl.edu/grades/gradepolicy.html and https://student.ufl.edu/minusgrades.html

Course letter grades will be assigned with the following percentages used for guidance:

92.0-100% = A	84.0-87.9% = B^+	72.0-75.9% = C^+	64.0-67.9% = D^+	< 56.0% = E
88.0-91.9% = A^-	80.0-83.9% = B	68.0-71.9% = C	60.0-63.9% = D	
	76.0-79.9% = B^-		56.0-59.9% = D^-	

Disputed Grades: You have the full right to dispute any grade received in this class, but the dispute must be in writing and submitted to their TA as a message through Canvas only (and copy to cao@chem.ufl.edu) within one week of the grade being posted to canvas. After one week, the instructor considers those grades final.

Homework: Homework will be assigned through the Canvas website of CHM2046. To earn full credit, you must show the details of your work to reach final results (examples will be given on how to describe solutions to homework problems). In addition, each assignment has a displayed deadline for earning full credit. Assignments that are late can be completed for half credit (a maximum of 24h delay, *contact your TA as a message through Canvas only*). Students who miss a homework deadline due to an excused absence can ask for an extension by contacting your TA.

Discussion Class and Worksheets: The Discussion Classes meet every Thursday, and your attendance is expected (attendance will be checked by your TA). The time of your discussion section is synchronous to the posted schedule, as it is the time you must be present. Your discussion section will contain 10 weekly worksheets (5 points each). You must go to your assigned discussion section to receive credit for worksheets. Groups of approximately 2 to 3 students will be assigned by your TA and work on it together. Discussion sessions will be held online using Zoom under the guidance of your graduate TA. You must meet during your scheduled discussion session with your TA who will coordinate the session. **Attendance will be taken (1 pts)** as well as **participation (2.5 pts)**. **To receive credit for your Worksheet (2.5 pts) you must attend the zoom meeting and upload your completed Worksheet before 11:59 pm the same day of your discussion**.

Your attendance and participation will be recorded during the discussions. **If you are more than 5 minutes late, then you forfeit your participation points for the day**. **If you are not present during the first 25 minutes of discussion period, then you forfeit your attendance points for the day.** Students who miss a discussion class due to an excused absence, must inform your *TA in advance as a message through Canvas, and then you can get the Attendance and Participation points back for the day and will receive an extension for submission of your Worksheet.*

Quizzes: Three quizzes will be given to evaluate your learning progress between exams. Quizzes will be administered at night from 8:20pm to 9:20pm (Eastern time) and will be held through Canvas using Honorlock (see below in the Exam section for details on general policies and the requirements on the use of Honorlock). Quizzes are related to content previously covered in lectures before the

due date for each quiz. Each quiz will have 9-12 questions related to lecture content. Questions can be structured in multiple formats (e.g., multiple-choice, fill in the blank, *etc.*) that must be answered in a total time of 60 minutes. For any missed quiz, check the policy applied for missed exams described below in this syllabus (Exam and Quiz Absences and Conflict/Make-up Policy).

EXAMS: Exams will be administered at night from 8:20pm to 10:20pm (Eastern time) and will be held through Canvas using Honorlock. Exam questions will consist of questions similar to homework, worksheets and quiz questions you have completed on Canvas. You can expect questions in form of numeric entry, multiple dropdowns, multiple answer, true/false, multiple choice, matching, and multiple fill in the blanks. You must use a non-graphing non-programmable scientific calculator on exams (with log, ln, root, and exponent (scientific notation) functions). Be sure to also bring pencils, and your UFID card. No notes, cell phones or other electronic devices can be in view during exams. Detailed instructions for your exams using Canvas will be given prior the exam. This course uses Honorlock for proctoring of during-term exams. Honorlock is UF's designated online proctoring service for classroom exams and quizzes that were previously in person but have moved online as part of the COVID-19 response effort. In order for you to take exams in this course you will need a government issued photo ID (or your Gator-1 ID), a working camera and microphone on your computer, a stable internet connection, and the Google Chrome browser (https://chrome.com) on your computer. Before and during your exam you will need to follow the Honorlock proctor's instructions. *You are allowed to have scratch paper to use during the exam. The scratch paper must be blank on both sides at the beginning of the exam-show this to the camera during your environment check.* Please familiarize yourself with the Honorlock student guide: https://dce.ufl.edu/media/dceufledu/pdfs/Honorlock-Student-Guide-UF-Update.pdf and the Honorlock Student Exam Preparation Information: https://dce.ufl.edu/media/dceufledu/pdfs/Honorlock-Student-Exam-Preparation-Information.pdf. 5 points will be deducted from your score if you neglect to sign the Honor Pledge question at the end of every exam.

Quiz and Progress exam "average/replace" Policy: This applies to all students. No quiz or 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 (or quizzes) will be replaced by the average of the three progress exams (or quizzes). 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: 30%, 70%, 80%, the 30% would be replaced with the average of 30, 70 and 80, which is 60%. That is a much better score than a 30%.

Exam and Quiz Absences and Conflict/Make-up Policy: Absences will be handled in accordance with official UF academic regulations. For more information, see https://catalog.ufl.edu/UGRD/academic-regulations/. Below is further clarification for two different types of situations.

(1) Conflicts with other events: Acceptable reasons to miss a scheduled exam include conflicting evening exams in courses with higher course numbers, 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/#absencestext). If you must be absent for an exam due to a documented and approved conflict known in advance, you must e-mail your instructor 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 or quiz 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 by you or by 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.

Canvas: UF's e-learning platform, Canvas, can be found at http://elearning.ufl.edu. You will find the syllabus, gradebook, files, class announcements, and other pertinent info for the course. Check Canvas often to ensure that you do not miss important announcements and that your gradebook is accurate.

Chemistry Learning Center (CLC): There is free help available from graduate student teaching assistants via Zoom as part of a virtual CLC. Your discussion TA will have office hours on Zoom. You will also receive zoom links for the other CHM2046 graduate TAs so you may attend any TA's Zoom office hours. Additionally, there is the teaching center http://www.teachingcenter.ufl.edu, which offers some resources for being successful in your CHM2046 class.

Honor Code: UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students 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." The Honor Code (https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class. 5 points will be deducted from your score if you neglect to sign the Honor Pledge question at the end of every exam. You will receive a 0 for the exam and no average/replace, if cheating has been detected.

U Matter, We Care: Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Accommodations for Students with Disabilities: Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting disability.ufl.edu/students/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. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation (use canvas email). The student is responsible for scheduling the exam dates with the DRC. Students with disabilities should follow this procedure as early as possible. The DRC has 4 business day policy to submit Accommodated Testing Requests (ATRs).

Recordings: Our class sessions may be audio-visually recorded for students in the class to refer to at a later time and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-

mute during class and participate verbally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

COVID-19 Policy for Face-to-Face Students: The following policies and requirements are in place to maintain your learning environment and to enhance the safety of our in-classroom interactions.

- You are required to wear approved face coverings at all times during class and within buildings. Following and enforcing these policies and requirements are all of our responsibility. Failure to do so will lead to a report to the Office of Student Conduct and Conflict Resolution.
- This course has been assigned a physical classroom with enough capacity to maintain physical distancing (6 feet between individuals) requirements. Please utilize designated seats and maintain appropriate spacing between students. Please do not move desks or stations.
- Sanitizing supplies are available in the classroom if you wish to wipe down your desks prior to sitting down and at the end of the class.
- Follow your instructor's guidance on how to enter and exit the classroom. Practice physical distancing to the extent possible when entering and exiting the classroom.
- If you are experiencing COVID-19 symptoms (Click here for guidance from the CDC on symptoms of coronavirus), please use the UF Health screening system and follow the instructions on whether you are able to attend class. Click here for UF Health guidance on what to do if you have been exposed to or are experiencing Covid-19 symptoms.
- Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work. Find more information in the university attendance policies.

UF Course Evaluations Process: 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/.

General Education Program objectives: 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. These objectives will be accomplished through participation in the course lectures and discussion sections, and individual work done on homework assignments and assessments.

This course satisfies the General Education requirement in the Physical Sciences.
A minimum grade of C is required for general education credit.

General Education Student Learning Outcomes: The following learning outcomes will be assessed through online assessments and examinations.

Area	Institutional Definition	Institutional SLO
CONTENT	Content is knowledge of the concepts, principles, terminology and methodologies used within the discipline.	Students demonstrate competence in the terminology, concepts, methodologies and theories used within the discipline.
COMMUNICATION	Communication is the development and expression of ideas in written and oral forms.	Students communicate knowledge, ideas, and reasoning clearly and effectively in written or oral forms appropriate to the discipline.
CRITICAL THINKING	Critical thinking is characterized by the comprehensive analysis of issues, ideas, and evidence before accepting or formulating an opinion or conclusion.	Students analyze information carefully and logically from multiple perspectives, using discipline specific methods, and develop reasoned solutions to problems.