

CHM2046 GENERAL CHEMISTRY II

SPRING 2024

INSTRUCTOR INFORMATION

Instructors	Email/Office/Phone	Office Hours
Dr. Simon Enrique Lopez D'Sola Assistant Instructional Professor	Email in Canvas preferred simonlopez@chem.ufl.edu 352-392-9700 LEI 312	TBA

TEACHING ASSISTANTS

Grad TAs: TBA

Email: TBA

Office hours: TBA

Undergraduate TAs: TBA

[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.

Room: CLB-C130. Classes days: M,W,F. Classes time: 1:55 pm – 2:45 pm (Period 7).

Exams are evening assembly exams, on campus, rooms TBA, periods E2-E3.

COURSE FEES

Additional Course Fees: none

GENERAL INFORMATION

PREREQUISITES

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

FIRST DAYS

Log into Canvas and access the course. You should check daily for new Announcements and/or emails containing important information.

COURSE DESCRIPTION AND GOALS

The second semester of the CHM 2045/CHM 2045L and CHM 2046/CHM 2046L sequence. Students who completed CHM 2045 or equivalent at another institution should consult a chemistry advisor before registering for this course. Acids and bases, additional aspects of chemical equilibria, thermodynamics, electrochemistry, complex ions and descriptive chemistry. (P).

As both a general education requirement and major's course CHM 2046 serves to teach the scientific method, skills for problem solving general chemistry knowledge, and a connections to the principles that govern the natural world.

Specifically, students will be able to:

1. Clearly communicate in writing information derived from course related readings/lectures about the major concepts and themes in the chemical sciences.
2. Evaluate the principles of chemical kinetics; analyze and solve related problems.
3. Apply knowledge of the fundamental principles of chemical, acid/base and aqueous equilibria to perform related calculations and make predictions of system behavior.
4. Describe and apply the fundamental principles of thermodynamics and electrochemical systems.
5. Describe the properties of complex ions and coordination compounds. Identify the importance of elements in nature and industry.
6. Analyze chemical principles in advanced applications; this may include nuclear and organic chemistry.

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.

The course objectives align with the UF General Education student learning outcomes and physical science area learning outcomes:

General Education SLO	Physical Science SLO	Course Objective Alignment	Assessment
Content	Identify, describe, and explain the basic concepts, theories and terminology of natural science and the scientific method; the major scientific discoveries and the impacts on society and the environment; and the relevant processes that govern biological and physical systems.	Objectives 2-6	All assessments and student practice assignments offer opportunities for students to demonstrate content knowledge.

Critical Thinking	Formulate empirically-testable hypotheses derived from the study of physical processes or living things; apply logical reasoning skills effectively through scientific criticism and argument; and apply techniques of discovery and critical thinking effectively to solve scientific problems and to evaluate outcomes.	Objectives 1-6	Homework, quizzes, iClicker, after lecture quizzes/homework exams.
Communication	Communicate scientific knowledge, thoughts, and reasoning clearly and effectively.	Objective 1-6	Weekly discussion class, worksheets.

COURSE LEARNING OUTCOMES

A complete list of student learning outcomes is posted in Canvas, organized by module/chapter.

REQUIRED & RECOMMENDED COURSE MATERIALS

TEXTBOOK (ONLINE EBOOK WITH HW; REQUIRED IN FULL)

The text Chemistry: The Molecular Nature of Matter and Change, 9th ed., Silberberg & Amateis (McGraw Hill) is required. Access to the textbook is via the ALEKS platform, accessed through a link in your Canvas course. A portion of your grade may stem from electronic homework (ALEKS) via the same link. You must purchase ALEKS360 (both the text and electronic homework) for the course. This includes access for the ALEKS Prep for CHM2045 at no additional charge to you.

There are two options for purchasing access to homework/ebook: **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 ALEKS 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.

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.

All other assigned material will be available through Canvas.

CALCULATOR (REQUIRED, MUST PURCHASE)

You will require a calculator capable of logarithmic functions. For exams, the calculator must be non-graphing and non-programmable.

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 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.

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 and correctly answering the worksheet questions uploaded in Canvas on Friday during the previous week (10 points). 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.

ALEKS HOMEWORK AND QUIZZES

ALEKS HW are due twice per week; each has an ALEKS video assignment as a prerequisite. You have multiple attempts at each homework assignment, with the highest score counting for credit. An ALEKS quiz is due each week on material covered that week in class. Quizzes are timed, with one attempt. One ALEKS quiz and 3 ALEKS homework assignment scores are dropped from your overall course grade. Both, ALEKS HW and ALEKS Quizzes are inside an ALEKS Module for each chapter.

IClicker

IClicker is a classroom response system used for in-class participation during lectures. I Clicker questions will start the second week of classes. Details on how to register for the course in IClicker will be announced in Canvas soon once the classes start.

AFTER LECTURE QUIZZES AND 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) from the textbook.

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 and blank paper are provided.

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.

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/#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 (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	23%
ALEKS Homework (inside Aleks Modules)	7%
ALEKS Quizzes (inside Aleks Modules)	3%
iClicker	2%
Discussion/Worksheets	5%
TOTAL	100%

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

Letter	A	A-	B+	B	B-	C+	C	D+	D	D-	E
Cutoff	92.0	88.0	84.0	80.0	76.0	72.0	68.0	64.0	60.0	56.0	< 56.0

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 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.

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: <http://www.dso.ufl.edu/SCCR/honorcodes/honorcode.php>.”

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, 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.

[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.

TENTATIVE SCHEDULE

The following lecture schedule is tentative, but exam dates will not change.

Dates	Topics (# of lectures)	Silberberg Chapters
Jan 08 Jan 10 Jan 12	Review of Chemical Kinetics; Reaction Rates (1); Half-life, reaction orders -determination, plots- (1); Activation Energy; Reaction Mechanisms (1).	Chap. 16
Jan 17 Jan 19	Reaction Mechanisms, Catalysts (1) Gas-phase Equilibria (1)	Chap. 16 Chap. 17
Jan 23 Jan 25	Heterogeneous Equilibria (1) Le-Chatelier's Principle (1) Reaction yield: Optimization, solving equilibrium problems (2)	Ch. 17 Ch 17 Ch. 18.1-18.8
Jan 30 Feb 1	Brønsted-Lowry acid-base potential and equilibria (2) Lewis Acid-Base Electrophile-Nucleophile, reactions and mechanisms (2)	Ch. 18.1-18.8 Ch. 18.9
Feb 6	Review Exam #1	Ch 16-18
Wednesday, Feb 7 (To be confirmed)	Progress Exam 1 (8:20pm-10:20pm)	Cumulative Ch. 16-18

Feb 9, 12, 14, 16	Acid-Base Titrations and Buffers (4)	Ch. 19.1-19.2
Feb 19, 21	Solubility Equilibria (2)	Ch. 19.3
Feb 23, 26	Solubility Equilibria, selective precipitation (2)	Ch. 19.3
Feb 28 March 01,04, 06	Complex ions and Amphoteric Hydroxides (1) Equilibrium Thermodynamics (3)	Ch. 19.4 Ch. 20
Thursday, March 7 (To be confirmed)	Progress Exam 2 (8:20pm-10:20pm)	Cumulative 16-20
March 08,18	Oxidation/Reduction Potential: Redox Reactions (2)	Ch. 21
March 20,22	Electrochemistry and Equilibria; Voltaic Cells (2)	Ch. 21
March 25,27,29	Electrolytic Cells (2)	Ch. 21
Apr 01,03,05,08	Transition Metals (4)	Ch. 23
Apr 10	Exam 3 Review (1)	Ch. 16-23
Thursday, Apr 11	Progress Exam 3 (8:20pm-10:20pm)	Cumulative Ch. 16-23
Apr 15,17,19	Main Group Elements (3)	Ch. 14
Apr 22,24	Introduction to Nuclear Chemistry (2)	Ch. 24
Monday, Apr 29	Final Exam (5:30 pm - 7:30 pm)	Cumulative Ch. 14,16-21+23,24

ALEKS Modules (Include ALEKS Homework (HW) & ALEKS Quizzes, both inside each module):

Activity	Due date (estimated)
Review module	01/17
Module ch. 16.1-16.4 review	01/18
Module ch 16.5-7	01/19
Module ch 17.1-2	01/22
Module ch 17.3-4	01/23
Module ch 17.5	01/25
Module ch 17.6	01/26
Module ch 18.1-3	01/29
Module ch 18.4	01/31
Module ch 18.5/6	02/02
Module ch 18.7	02/05

Module ch 18.8/10	02/06
Module ch 19.1	02/13
Module ch 19.2	02/15
Module ch 19.3	02/26
Module ch 19.4	02/29
Module ch 20.1	03/02
Module ch 20.2	03/04
Module ch 20.3	03/05
Module ch 20.4	03/06
Module ch 21.1	03/09
Module ch 21.2	03/19
Module ch 21.3	03/21
Module ch 21.4	03/25
Module ch 21.7	03/29
Module ch 14	04/18
Module ch 23.1-3	04/19
Module ch 23.4	04/20
Module ch 24.1	04/21
Module ch 24.2	04/22
Module ch 24 3-7	04/24