

CHM 2046

General Chemistry II

Spring, 2023

Pre-requisites: Grade C or better in CHM 2045 **Co-requisite:** CHM2046L

Instructor: Prof. G. Christou **Office:** CLB 408

Contact: Email through Canvas **TA's:** see the TA assignment sheet

Office Hours: R 3.00 - 5.30 pm

Sections: 23243/23244/23245/23246/23247/23248/23598/23599/23600

Day: M, W, F **Room:** CLB 130 **Period:** 5 (11:45-12:35am)

Textbook: *Chemistry: The Molecular Nature of Matter and Change* (9th Edition) by M. Silberberg is required and is available via the opt-in process. You are advised to read and study the textbook, and do the assigned homework. However, you should remember that the textbook supports the lectures but does not substitute for them. Class attendance is strongly recommended. *Remember: it is the instructor that writes the exams, not the textbook!*

The instructor's notes and other useful info are available online.

Course Fees: none

COURSE DESCRIPTION AND GOALS: This is the second semester of the CHM 2045/CHM 2045L and CHM 2046/CHM 2046L sequence.

CHM 2046: Equilibrium theory and applications, acids and bases, additional aspects of chemical equilibria, thermodynamics, electrochemistry, periodic table and trends, and basic inorganic chemistry. As both a general education requirement and a major's course, CHM 2046 serves to teach the scientific method, skills for problem solving, general chemistry knowledge, and a connection to the principles that govern the natural world.

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 II, these objectives will be met as detailed below.

At the end of this course, students are expected to have achieved the following 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 those related to equilibrium, chemical thermodynamics, and complex ions. 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.

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

Approximate Course Schedule (X = no class due to holiday) All classes, exams and quizzes will be live (in-person)				
Week	Dates	Chapter	Topic	Exams/Quizzes
1	Jan 9, 11, 13	17	Equilibrium	
2	Jan X, 18, 20	17	Equilibrium	
3	Jan 23, 25, 27	18	Acids-Bases	
4	Jan 30, Feb 1, 3	18	Acids-Bases	Quiz 1: Feb 2
5	Feb 6, 8, 10	19	Other Equilibria	Exam 1: Feb 8
6	Feb 13, 15, 17	19	Other Equilibria	
7	Feb 20, 22, 24	20	Thermodynamics	
8	Feb 27, Mar 1, 3	20	Thermodynamics	Quiz 2: Mar 2
9	Mar 6, 8, 10	21	Electrochemistry	Exam 2: Mar 8
10	Mar X, X, X		SPRING BREAK	
11	Mar 20, 22, 24	21	Electrochemistry	
12	Mar 27, 29, 31	14	Main Group Elements	
13	Apr 3, 5, 7	14	Main Group Elements	Quiz 3: Apr 6
14	Apr 10, 12, 14	23	Transition Metals	Exam 3: Apr 13
15	Apr 17, 19, 21	23	Transition Metals	Quiz 4: Apr 20
16	Apr 24, 26	23	Transition Metals	
	May 1		FINAL EXAM	7.30-9.30 am

Exam Coverage: The three Exams are scheduled during periods E2-E3 (8.20 - 10.10 pm) on Feb 8, Mar 8, and Apr 13, and will cover material up to and including the previous Friday. The Final Exam will be cumulative, but with a greater emphasis on material covered after the Exam 3 cut-off. Any adjustments to these cut-offs will be announced in class.

Make sure you turn up to the correct room for the exam - there are other CHM 2046 exams at the same time as ours!

Quizzes: There will be four quizzes that will be given during the Thursday Discussion Sections on Feb 2, Mar 2, Apr 6, and Apr 20. They are timed to also help you prepare for the Exams.

Discussion Sections. Discussion sections begin Jan 13 and will be used for team worksheets, which earn points toward your course grade. Discussion sections also provide opportunity for questions and clarifications on homework problems, reading, and lecture content.

Calculators: You will need a calculator for quizzes and exams. Bring your own scientific calculator. No graphing calculators or calculators that store equations or other data are allowed. Calculators are not provided.

<u>Grading:</u>	Quizzes	best 3 of 4	@ 50 points each	=	150 points
	Exams	best 2.5 of 3	@ 150 points each	=	375 points
	Worksheets	@5 pts each, 40 pts maximum		=	40 points
	Final Exam		@ 200 points	=	200 points
			Total		<hr/> 765 points

Grading Scale: The approximate grade cut-offs are shown. They will not be raised.

**A (89%), A- (85%), B+ (81%), B (78%), B- (75%), C+ (71%),
C (68%), C- (65%), D+ (61%), D (57%), D- (53%), E (<53%)**

Conflict Quizzes: You are strongly advised to ensure that there is no conflict or other reason that makes you miss a Quiz. It is very difficult

to organize a conflict Quiz, and only in exceptional circumstances, and with prior approval of the instructor, will a conflict Quiz be set.

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 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 contact me with the documentation at least one week prior to the scheduled exam and a 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). Instructors 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.

Exam Grade Disputes: Any and all exam grade disputes or Scantron confirmations must be performed within two weeks of the scheduled exam date. Bubbling errors will not be negotiated, and a 5 point penalty

will be applied for failure to bubble in a form code, UFID, or not taking the exam in the assigned room.

Homework: End-of-chapter problems from the textbook will be assigned, but not collected or graded. These are to provide you practice with the kinds of problems you will face in quizzes and exams.

Other Absences: Attendance records are not maintained. Please understand that you are responsible for being aware of all announcements made and material distributed in class. Missing class, even one class, is an effective means of getting left behind.

Chemistry Learning Center: The CLC, located in SFH 105, is a study facility available to all chemistry students. You may work there whenever the building is open, which is 7am to 8pm weekdays. Please be quiet, and ask others to be so also, when you are in this room. Eating and socializing are to be conducted outside in one of our many courtyards. Chemistry teaching assistants will be available here to answer questions and provide help during most daytime and early evening hours. The times at which the CHM 2046 assistants are available will be posted online and in the CLC. **You may see your own or any other TA whenever convenient, no appointment necessary.** Assistants teaching in other courses should also be able to assist you with most topics, even if they are not currently teaching CHM 2046.

Additional Study Resources: [Broward Teaching Center](#) offers free walk-in help at scheduled times for all students that you may find useful. See their website for details. The Office of Academic Support also offers [free tutoring](#).

Students with Disabilities: Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <http://www.dso.ufl.edu/drc/>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when

requesting accommodation. The student is responsible for scheduling the exam dates with the DRC. Students with disabilities should follow this procedure as early as possible.

Additional Information:

1. Honor code statement: see <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>
2. Students with Disabilities: see <https://disability.ufl.edu/>
3. Counseling and Health Care: see <https://counseling.ufl.edu/>

Note: 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.