

CHM2046 – GENERAL CHEMISTRY II – SUMMER 2020

INSTRUCTORS:

May 11 through June 19 Dr. Steven Harris E-mail (for administrative purposes): steven.harris@chem.ufl.edu	July 6 through August 14 Dr. Martina Sumner E-mail (for administrative purposes): m.sumner@chem.ufl.edu
Office Hours: MTRF 9:30 to 10:35 am	Office Hours: MTRF 9:30 to 10:35 am

This course will be delivered online/synchronously. Course content will be delivered through the Canvas course shell and required discussion meetings will occur via the Zoom platform during your scheduled discussion period.

COURSE SCHEDULE (the lecture schedule is tentative, but exam dates will not change, PLAs and HW can be found under Quizzes in canvas):

Date	Topic	Before class	After class (for credit and optional)	Silberberg 8 th Chapters*
May 11	Kinetics; rate law, integrated rate law, rate constant, mechanisms, theories of chem kinetics	Read syllabus, check out canvas, PLA Ch. 16.6/7	HW ch 16 2045, HW ch 16 review, HW ch 16.4	Ch. 16
May 12	Chemical Equilibrium; K and Q	PLA Ch. 17.1/2	HW ch 17.1/2	Ch. 17.1-2
May 14	Chem eq; relation between Kc and Kp, comparing Q and K	PLA Ch. 17.3/4	HW ch 17.3/5, HW ch 17.4	Ch. 17.3-4
May 15	How to solve eq problems	PLA Ch. 17.5	HW Ch. 17(1)	Ch. 17.5
May 18	More solving eq problems, LeChatelier's principle	PLA Ch. 17.5/6	HW ch 17.5/6; HW Ch. 17(2)	Ch. 17.5-6
May 19	LeChatelier's principle	PLA Ch. 17.6	HW ch 17.6, HW 17.6(1)	Ch. 17.6
May 21	Acid-Base Eq.; autoionization of water, pH scale	PLA Ch. 18.1/2	HW Ch 18	Ch. 18.1-2
May 22	Bronsted-Lowry acid/base definitions	PLA Ch. 18.3	HW Ch 18(1)	Ch. 18.3
May 26	Solving problems involving weak acid eq.	PLA Ch. 18.4	HW Ch 18.(2)	Ch. 18.4
	Exam 1 (May 27 7 to 9 pm)			Ch. 16-18.3

May 28	Molecular properties and acid strength; weak bases	PLA Ch. 18.5/6		Ch. 18.5-6
May 29	Acid-Base Properties of Salt solutions	PLA Ch. 18.7		Ch. 18.7
June 1	Lewis Acid-Base definitions, electron-pair donation	PLA Ch.18.8/9	HW Ch. 18	Ch. 18.8-9
June 2	Buffers	PLA Ch. 19.1		Ch. 19.1
June 4	Buffer capacity and preparation; Strong acid/strong base titration curve	PLA Ch. 19.2(1)	HW Ch. 19.1	Ch. 19.1-2
June 5	Weak acid/strong base; weak acid/weak base, polyprotic acids	PLA Ch. 19.2(2)	HW Ch. 19.2	Ch. 19.2
June 8	Equilibria of slightly soluble ionic compounds, K_{sp}	PLA Ch. 19.3(1)		Ch. 19.3
June 9	Predicting ppt formation, selective ppt	PLA Ch. 19.3(2)	HW Ch. 19.3	Ch. 19.3
June 11	Equilibria involving complex ions	PLA Ch. 19.4		Ch. 19.4
June 12	Transition elements; properties of transition elements and inner elements	PLA Ch. 23.1/2/3	HW Ch. 23.1/2/3	Ch. 23.1-3
June 15	Coordination compounds, formulas and names	PLA Ch. 23.3	HW Ch. 23.3	Ch. 23.3
June 16	Crystal field theory	PLA Ch. 23.4	HW Ch. 23.4	Ch. 23.4
June 18	Exam 2 (June 18)			
June 19	Last day of summer A			
June 22- July 3	Summer break			
July 6	Thermodynamics; 2 nd law, entropy	PLA ch 20.1		Ch 20.1
July 7	Calculating the change in entropy	PLA ch 20.2	HW ch 20.1/2	Ch 20.2
July 9	Entropy, free energy, and work	PLA ch 20.3	HW ch 20.3	Ch 20.3
July 10	Free energy, equilibrium and reaction directions	PLA ch 20.4	HW ch 20.4, HW Ch 20 all	Ch 20.4
July 13	Electrochemistry; balancing redox reactions	PLA ch 21.1	HW Ch 21(1)	Ch 21.1
July 14	Voltaic cells, cell construction and operation, notation	PLA ch 21.2	HW Ch 21(2)	Ch 21.2
July 16	Voltaic cell potential, E°	PLA ch 21.3		Ch 21.3
July 17	Free energy and electrical work	PLA ch 21.4	HW Ch 21.4,	Ch 21.4

July 20	Batteries, primary, secondary, fuel cells, corrosion	PLA ch 21.5/6	HW Ch 21.4(2)	Ch 21.5-6
July 21	Electrolytic cells, energy to drive nonspontaneous rxn	PLA ch 21.7	HW Ch 21.7, HW Ch 21.7(2)	Ch 21.7
July 23	Exam 3 (July 23)			Ch 20- 21
July 24	Nuclear reactions; radioactive decay and nuclear stability	PLA 24.1	HW ch 24.1/2	Ch 24.1
July 27	The Kinetics of radioactive decay	PLA 24.2	HW ch 24.2	Ch. 24.2
July 28	Ionization, application of radioisotopes,	PLA 24.3/4/5		Ch 24.3-5
July 30	The Interconversion of mass and energy	PLA 24.6		Ch. 24.6
July 31	Application of fission and fusion	PLA 24.7	HW ch 24 all	Ch. 24.7 and review
Aug. 3	Organic chemistry, structure and classes of hydrocarbons, optical isomers	PLA 15.1/2	HW ch 15(1), HW Ch 15.2	Ch 15.1-2
Aug 4	Some important classes of organic reactions, functional groups	PLA 15.3	HW Ch 15.2(1)	Ch 15.3
Aug 6	Functional groups	PLA 15.4	HW Ch 15.4	Ch 15.4
Aug 7	Functional groups	PLA 15.4(2)		Ch 15.4
Aug. 10	Exam 4 (August 10)			
Aug. 11	Review for final exam			
Aug. 13	Final comprehensive Exam			
Aug. 14	No class			

*The topics that will be covered from each chapter will be selective and announced in class.

Holidays (no classes): Monday May 25th, June 22nd – July 3 (summer break)

LECTURE: MTRF Period 2 (9:30 to 10:35 pm). This course will be delivered online/synchronously.

MATERIALS:

You will require a computer with an internet connection, a functional webcam and microphone and a handheld mirror (for Honorlock).

Tophat subscription for clicker questions (required).

Silberberg 8th edition recommended (solution manual for EOCs available under course reserves)

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>

COURSE OBJECTIVES: As both a general education requirement and major's course, CHM2046 serves to teach: the scientific method, skills for problem solving, general chemistry knowledge, and a connection to the principles that govern the natural world.

GRADES: Grades for the term will be determined as follows:

4 Progress Exams	60%
Final Cumulative Exam	25%
PLA/HW	5%
Tophat/Proficiency quizzes	5%
Worksheets (discussion)	5%
TOTAL	100%

The following grade cutoffs will be used (these are non-negotiable):

92-100% = A	84-87.9% = B+	72-75.9% = C+	64-67.9% = D+	< 56 = E
88-91.9% = A-	80-83.9% = B	68-71.9% = C	60-63.9% = D	
	76-79.9% = B-		56-59.9% = D-	

Information on current UF grading policies for assigning grade points can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

POSTED GRADES: Should a student wish to dispute any grade received in this class, the dispute must be in writing (via e-mail to m.sumner@chem.ufl.edu or steven.harris@chem.ufl.edu) and submitted to the instructor within one week of the grade being posted to canvas. The deadline for grade dispute for Dr. Harris's half is June 19. After one week has passed from when the grade was posted and the student made aware of the posting of the grade(s) via an announcement on canvas, the instructor considers those grades final.

PRE-LECTURE ASSIGNMENTS (PLA): You will be expected to complete pre-lecture assignments in preparation for each class day. These assignments will be posted on Canvas under the quizzes tab and will be due prior to class. You will have multiple attempts to successfully answer the pre-lecture assignments.

HOMEWORK (HW): Two to four homework assignments will be due per chapter to help you understand the material. The homework will be posted on Canvas under the quizzes tab. You will have multiple attempts to successfully answer the questions. Five percent of the course grade is based on your performance on the PLA/HW. 6 assignments will be dropped at the end of the semester. Additional HW assignments for each chapter can be found under Quizzes, then scroll down to Practice Quizzes. These are not worth any points.

You should also work numerous EOCs. The solution manual for all EOCs are available under course reserves on canvas.

CLICKERS (TOPHAT)/PROFICIENCY QUIZZES: Five percent of your grade will come from the proficiency quizzes (1.5%) and TopHat (3.5%). You can earn points by correctly answering clicker questions through TopHat. Each class day will be worth three points.

Proficiency Quizzes: This semester, CHM2046 will be part of an ongoing Chemical Education Research project within the Department of Chemistry at UF. The study will look at exam performance in CHM2046 in correlation with quiz performance. All students, irrespective of whether they wish to participate in the study, will complete a minimum of three to a maximum of six Proficiency quizzes over the course of the semester as part of their regular workload. For exams 1-3 a pair of Proficiency Quizzes will be available. The higher score of each pair will contribute to the course grade for a total of 1.5-% (3 PQs are required, each worth 0.5-% of the course grade); the lower score will be dropped. You may complete one or both PQs in each pair. Students will be randomly assigned to one of two groups, and the timing of the quizzes will vary from group to group. To participate in the study, students will complete the Informed Consent Form Survey through a Canvas Survey by May 20, 2020. Participation means that you agree to allow your exam and quiz grades to be collected for research. Participation does not influence your course grade in any way. **Please note that you will have to complete the quizzes to earn a portion of the course grade, and they are graded based on correctness, not completion.** If you do not wish to participate in the study and have your exam and quiz scores removed from the collected data, you still must take the assigned Proficiency quizzes. Each quiz is designed to be completed within a 30- minute time frame and will be available for two days during the school week. We ask you to participate in the study since the data collected may lead to future improvements of CHM2045/2046. *Special note: Extensions for missed Proficiency Quizzes will not be granted for any reason. However, if you have DRC accommodations for extra time, please email your accommodation letter to Kaylee Todd at kmtodd8485@chem.ufl.edu.* In addition to the quizzes, two surveys will be administered through Canvas – the first after the first during-term exam and the second before the final exam. The surveys should take no more than 10-15 minutes to complete. The surveys will be scored for completion, and the scores may contribute to the course grade at the instructors' discretion.

DISCUSSION CLASSES/ WORKSHEETS: Five percent of the course grade is based upon your attendance at your discussion class and the correct completion of the worksheet. The Discussion Classes meet every Wednesday and your attendance is expected. If you are more than 5 minutes late, then you forfeit your 2 participation points for the day. If you are not present during the whole discussion period, then you forfeit your 3 attendance point for the day. The worksheet is worth 5 points. A total of 10 points can be earned each week by attending your discussion zoom class and correctly answering the worksheet questions. The worksheets will be posted on Canvas in advance and you may start working on it before you come to discussion. The canvas worksheet will be available Wednesdays from 12 am to 11:59 pm. You will then have until 11:59 pm to complete the worksheet (as a quiz on canvas). Any grade discrepancy needs to be addressed within a week of posting grades to canvas to your TA.

HONORLOCK: Honorlock will proctor your exams this semester. Honorlock is an online proctoring service that allows you to take your exam from the comfort of your home. You DO NOT need to create an account, download software or schedule an appointment in advance. Honorlock is available 24/7 and all that is needed is a computer, a working webcam, and a stable Internet connection.

To get started, you will need Google Chrome and to download the Honorlock Chrome Extension. You can download the extension at www.honorlock.com/extension/install

When you are ready to test, log into Canvas, go to your course, and click on your exam. Clicking "Launch Proctoring" will begin the Honorlock authentication process, where you will take a picture of yourself, show your ID, and complete a scan of your room. You will need a small handheld mirror so you can show your computer screen to the camera and also show underneath your table or desk. Honorlock will be recording your exam session by webcam as well as recording your screen. Honorlock also has an integrity algorithm that can detect search-engine use, so please do not attempt to search for answers, even if it's on a secondary device.

Good luck! Honorlock support is available 24/7/365. If you encounter any issues, you may contact them by live chat, phone (855-828-4004), and/or email (support@honorlock.com).

EXAMS: Exams will be administered at night from 7:00pm to 9:00pm (Eastern time) via Honorlock. Exam questions will consist of questions similar to the HW/PLA/worksheet/tophat/PQ you have completed on canvas. So expect 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).

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 e-mail your instructor (m.sumner@chem.ufl.edu) 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 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.

Any and all exam grade disputes must be performed within one week of the scheduled exam date. 5 points will be deducted from your score if you neglect to sign the Honor Pledge question at the end of every exam.

Progress Exam "Average/Replace" Policy: (Applies to all students). No Progress Exam scores will be dropped for any reason. However, to help alleviate the stress of potential issues that do not fall under the officially-sanctioned absences described above, and that may affect a Progress Exam score (for example, unapproved exam absence or poor exam performance), the lowest score of the four Progress Exams will be replaced by the average score of all four of the Progress Exam scores: Example (unapproved absence): Exam 1, 70%; Exam 2, 0%; Exam 3, 90%; Exam 4, 80% The Progress Exam 2 score (0%) will be replaced by $\{(70+0+90+80) / 4\} = 60\%$. Example (poor exam performance): Exam 1, 70%; Exam 2, 40%; Exam 3, 90%; Exam 4, 80% The Progress Exam 2 score (40%) will be replaced by $\{(70+40+90+80) / 4\} = 70\%$

CONTACTING THE INSTRUCTOR / OFFICE HOURS: Emails are for administrative purposes only, and not for distance-instruction. All academic inquiries must be made during office hours. If this is not possible, visit the graduate TAs zoom office hours (schedule posted on canvas). Please be prepared before coming to office hours, bring specific questions and your previous work.

CHEMISTRY LEARNING CENTER (CLC): There is free help to be had from graduate student teaching assistants via zoom. 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 TAs 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://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>) 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 if cheating has been detected.

CANVAS (<http://elearning.ufl.edu>): Here you will find the syllabus, gradebook, files, class announcements, and other pertinent info for the course. It is your responsibility to check Canvas often to make sure that you do not miss important announcements and to ensure that your gradebook is accurate. For computer assistance, visit <http://helpdesk.ufl.edu/>.

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 e-mailed to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible.

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.

EVALUATIONS: 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 REQUIREMENTS: This course satisfies the general education program requirements for the physical sciences at the University of Florida. More information regarding the program objectives, student learning outcomes, and specific goals for CHM2045/CHM2046 can be found in the *General Education Program Requirements* document found on Canvas.

DISCLAIMER: This syllabus represents our current plans and objectives. If those need to change as the semester progresses, then the changes will be communicated to the class clearly via announcements in class and on Canvas.