

<b>CHM 2046</b>	<b>General Chemistry 2</b> Gower Sections	<b>Summer 2016</b>
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**INSTRUCTOR:** George (Jeff) Gower ([jgower@ufl.edu](mailto:jgower@ufl.edu))

Lectures: MTWF 5<sup>th</sup> Period (2:00–3:05pm in CLB 130)

Discussion Classes: Thursdays (period and room depends on section number)

Office hours: MTW, 3:15–5:00pm (CLB 314, phone: 392-2155)

**PREREQ:** Grade of C or higher in CHM 2045.

**TEXT:** Chemistry: The Molecular Nature of Matter and Change (6<sup>th</sup> Edition)

by Martin Silberberg (McGraw-Hill)

<b>PLANNED LECTURE AND EXAM SCHEDULE</b>	<b>Chapters</b>
<b>May 9 – 18:</b> Principles of Chemical Equilibrium; Brønsted-Lowry Acids and Bases and Acid-Base Potential; Acid-Base Equilibria	17–18.5 (skip 17.3 and 17.6)*
<b>PROGRESS EXAM 1 – Friday, May 20 (2:00–3:15pm)</b>	<b>Cumulative</b>
<b>May 23 – June 1:</b> Molecular Properties and Acid-Base Potential; Salt/Ion Hydrolysis; Lewis Acids and Bases; Acid-Base Buffers; Acid-Base Titrations	18.6–19.2
<b>PROGRESS EXAM 2 – Friday, June 3 (2:00–3:15pm)</b>	<b>Cumulative</b>
<b>June 6 – 10:</b> Solubility Equilibria; Selective Precipitation	19.3–19.4
<b>June 13 – 15:</b> Gas-Phase / Heterogenous Equilibria; Reaction Yield Optimization	(17.3 and 17.6)*
<b>PROGRESS EXAM 3 – Friday, June 17 (2:00–3:15pm)</b>	<b>Cumulative</b>
<b>June 27 – July 6:</b> Thermodynamics (Enthalpy, Entropy, Free Energy, Reaction Spontaneity, and Work) and Equilibria; Thermodynamic Coupling	20 (review Ch. 6)
<b>PROGRESS EXAM 4 – Friday, July 8 (2:00–3:15pm)</b>	<b>Cumulative</b>
<b>July 11 – 20:</b> Oxidation/Reduction Potential; Electrochemistry and Equilibria; Voltaic and Electrolytic Systems	4.5–4.6 and 21
<b>PROGRESS EXAM 5 – Friday, July 22 (2:00–3:15pm)</b>	<b>Cumulative</b>
<b>July 25 – Aug. 2:</b> Main-Group and Transition Elemental Chemistry; Introduction to Organic Chemistry; Introduction to Nuclear Chemistry	Selected portions of Chapters 14, 23,15,24
<b>FINAL EXAM – Wednesday, August 3 (2:00–3:15pm)</b>	<b>Cumulative</b>

**HOLIDAYS (no classes):** May 30 (Memorial Day); June 20–24 (Summer Break); July 4

**LECTURE ATTENDANCE:** It will be fully expected that all students are physically present and alert (cell phones put away) at every lecture. Please understand that exam questions will be prepared with this expectation in mind. The official UF attendance policy can be found at the link below.

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

(Although the lectures will be videorecorded via the Mediasite system (the link to the videorecordings can be found on the course web site under “Files”), this is a very poor substitute for physical attendance and should only be used for lecture clarification purposes or in case of unavoidable lecture absence.)

**DISCUSSION CLASS ATTENDANCE:** Students are expected to attend all Discussion Classes during the periods for which you are registered. Discussion Classes Begin On Thursday, May 12<sup>th</sup> and end on Thursday, July 28<sup>th</sup>. During these sessions, students will collectively discuss and complete **worksheets** that relate to previously covered lecture material – class attendance and participation on the worksheets will count toward your course grade (see "Grades" below). If additional time permits, your TAs will address any other conceptual or calculational concerns that the students may have.

**Discussion-class conflicts/absences:** Since unavoidable emergent situations (illnesses, accidents, family emergencies, etc.) do arise occasionally, we've incorporated a dropped-worksheet policy (the best 10 of 11 Discussion-Class worksheets will be

counted toward your grade). No make-up Discussion worksheets will be offered. However, if you know in advance that you must be absent for a Discussion class due to a documented and approved academic or UF athletic conflict or other pre-approved conflict, bring the applicable documentation to your TA at least one week prior to the scheduled Discussion class, and a make-up Discussion worksheet will be provided to you to work on and submit (within one week) for credit. Failure to bring documentation and/or obtain one-week pre-approval for the early-conflict Discussion worksheet will result in your request being denied. Failure to submit your early-conflict Discussion worksheet to your TA within the one-week period will result in a zero score for that worksheet.

**E-LEARNING (Canvas)** (<http://elearning.ufl.edu>): Here you will find your gradebook for the class, selected lecture material, Online-Practice-Problems (under "Quizzes"), the lecture video link, files, Suggested-End-Of-Chapter-Problem solutions, class announcements, and other pertinent info for the course. It is your responsibility to check the Class Web Site often (as well as your gradebook) to make sure that you do not miss important announcements and other information and to ensure that your gradebook is accurate. Please set your notification preferences so that course announcements are emailed to you, and be sure that you check your UF email frequently. If you have any problems with your GatorLink name or password, you should either go on-line <http://www.gatorlink.ufl.edu>, contact the Help Desk at 392-HELP, or go to 520 CSE for personal assistance. For other computer assistance, visit <http://helpdesk.ufl.edu/>.

**“HOW TO SUCCEED IN COLLEGE CHEMISTRY”**: This document is posted in the Files folder in Canvas. Read it carefully and do exactly as it says. The detailed structured method of self-assessment strategic study skills in this document has been proven to work many times by many different students over many years (including yours truly). For most students, it is the only way to succeed in the course (and in other courses like this one). Trust me on this: failure to read and do exactly as it says in this document will most likely result in frustration and lack of success in this course for the majority of students. Please do not disregard this advice.

**ONLINE PRACTICE PROBLEMS**: There will be ungraded Online Practice Problems posted under the "Quizzes" tool on Canvas. Your first attempt at the quizzes should be done “cold” (with no outside assistance), as if you were taking an actual exam or quiz, in order to ASSESS and GRADE yourself so that you can identify your specific weaknesses with the material as per the “How To Succeed In College Chemistry” document. Successive attempts are to be made after rethinking each question (or, if necessary, after you’ve obtained help). These practice problems are for YOU for your own SELF-ASSESSMENT, so use them wisely and properly, in a timely manner, for optimal result. Do not merely use them for last-minute exam study purposes – doing so will waste this resource.

**SUGGESTED-END-OF-CHAPTER (EOC) PROBLEMS**: These are problems from the Silberberg 6<sup>th</sup> edition (see top of syllabus) textbook that are selected based on their appropriateness for the course. The complete worked-out solutions are posted in Canvas for each and every EOC problem in this textbook – be sure to utilize this valuable self-assessment resource! These problems are also recommended for self-assessment preparation for exams. (Again, read the “How To Succeed In College Chemistry” document for vital strategies for success in this course when doing EOC problems).

**CHEMISTRY LEARNING CENTER (CLC)**: Tutoring from graduate student TAs is available in the CLC Mon-Friday in Flint Hall 257. Your discussion TA will have office hours in the CLC, but you may go there anytime any TA is assigned there to get help on questions pertaining to chemistry. A schedule of the TA schedules will be posted in the corridor outside the CLC and also in Canvas.

And, there is the **TEACHING CENTER** located on the ground floor of Broward Hall, if you’d like to use that free resource. Their web site is <http://www.teachingcenter.ufl.edu>.

**INSTRUCTOR EMAIL and OFFICE HOURS:** Course administrative queries can be emailed to the instructor (please email me at [jgower@ufl.edu](mailto:jgower@ufl.edu)) or made during office hours (or by special appointment if necessary). However, chemistry and course-content queries should be made in person during scheduled office hours in CLB 314 or immediately after lectures in CLB 130 if time permits. If these options are not possible, and you have questions regarding chemistry understanding, please visit the CLC where TAs are available to help you. Please consult the online chapter solutions (if applicable) before coming to office hours. Please also understand that **office hours are not study-hall sessions**. When you come to office hours, be sure your queries are pre-prepared and that you are ready to discuss the queries as soon as you arrive; do not plan to sit and study or do practice problems during office hour time.

**EXAMS:** All exams (75 minutes) will take place in CLB 130 on the days scheduled. You may only use a non-graphing non-programmable scientific calculator on exams (except for the conceptual Final Exam during which no calculators will be allowed). Be sure to also bring pencils, section number, and your UF ID card. No notes, papers, cell phones or other electronic devices can be in view during exams. **Be sure to bubble scantrons carefully (Form Code, UF ID, answers, etc.) – bubbling errors are not negotiable.**

All exams are cumulative. Cumulative exams are a necessity in CHM2046 because each successive topic builds upon, and depends upon, previously covered material. Therefore, do not allow yourself to get behind, and always review your previous exams when studying for successive exams.

**Exam Conflict/Absence Policy:** No makeup Progress Exams will be given after the regularly scheduled Progress Exam date for any reason.

(1) If you know in advance that you must be absent for a Progress Exam or for the Final Exam due to a documented and approved academic or UF athletic conflict or other pre-approved conflict, bring the applicable documentation to me at least one week prior to the scheduled exam, and an early conflict exam will be arranged for you. Failure to bring documentation and/or obtain one-week pre-approval for the early conflict exam will result in your request being denied.

(2) If you experience a last-minute unavoidable emergent situation (illness, accident, emergency, etc.) that prevents you from notifying me prior to an exam, and prevents you from attending an exam (verifiable documentation must be provided that clearly indicates that you were physically unable to attend the exam), you need to see me in person as soon as you are no longer ill and/or as soon as you are able to do so.

(More information can be found in the General Chemistry Exam Absence Policy document located in the "Files" folder on the course web site.)

**Progress Exam "Average/Replace" Policy:** (Applies to all students). No Progress Exam scores will be dropped. 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 (unapproved absence, poor exam performance, etc.), the lowest score of the five Progress Exams will be replaced by the average score of all five of the Progress Exam scores.

Example (unapproved absence):

Exam 1, 80%; Exam 2, 90%; Exam 3, 70%; Exam 4, 0%; Exam 5, 90%,

Then the Exam 4 score (0%) will be replaced by  $\{(80+90+70+0+90) / 5\} = 66\%$ .

Example (poor exam performance):

Exam 1, 80%; Exam 2, 90%; Exam 3, 70%; Exam 4, 50%; Exam 5, 90%,

Then the Exam 4 score (50%) will be replaced by  $\{(80+90+70+50+90) / 5\} = 76\%$ .

**Missing scores (or questionable zero scores) and checking your scantron:** If your exam score is MISSING from your e-Learning gradebook, or if your exam score is ZERO and you do not think this score is correct, please contact me ASAP. It could be that your UF ID was not properly bubbled in. Otherwise, if you just want to see your scantron for other verification purposes, scantrons may be viewed during the one-week period of office hour sessions (in CLB 314) following the posting date of the exam score in your Canvas gradebook.

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

Discussion-Class Worksheets (best 10 of 11 @ 10 pts)	100 pts
Progress Exams (5 @ 100 pts)	500 pts
Final Exam	200 pts
<b>TOTAL</b>	<b>800 pts</b>

The following grade cutoffs will be used (grades are not curved and are non-negotiable):  
90-100% = A 86-89% = A- 83-85% = B+ 80-82% = B 76-79% = B-  
73-75% = C+ 70-72% = C 66-69% = C- 63-65% = D+ 60-62% = D  
< 60% = E

For further information on UF's Grades and Grading Policies, go to  
<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

**HONOR CODE:** (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>)

The UF Student Honor Code applies to all exams and assessments given in this course. Please understand that absolutely no leniency will be extended in any case of academic dishonesty.

**INSTRUCTOR EVALUATIONS:** Students are expected to provide feedback on the instruction in this course by completing online evaluations at <https://evaluations.ufl.edu> during the last two or three weeks of the semester. Students will be given specific times when they are open. Summarized results of these evaluations are available to students at <https://evaluations.ufl.edu/results/>.

**DISABILITIES / STUDENT MENTAL HEALTH COUNSELING:** Students requesting classroom and exam accommodations should contact the Dean of Students Disability Resources Center (DRC) at 392-8565 or <http://www.dso.ufl.edu/drc/> and obtain the proper forms that need to be turned in to me during the first week of class or as soon as possible after obtaining the paperwork from the DRC. It is the student's responsibility to schedule and arrange accommodations with the DRC. Students may seek mental health counseling at any time. See <http://www.counseling.ufl.edu/cwc/>.

**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](mailto: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](tel: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.

**COURSE INFO:** CHM 2046 and CHM 2046L constitute the second semester of the two term sequence of General Chemistry, CHM 2045-2045L-2046-2046L. This sequence is suitable for all science and engineering majors.

**GENERAL EDUCATION CREDIT:** This course is available for general education credit. This course introduces students to fundamental concepts of chemistry including bonding, atomic and molecular structure, chemical reactions, states of matter, reaction rates, chemical thermodynamics and equilibria. The scientific method and the place of chemistry in the everyday world are emphasized.

**PROGRAM OBJECTIVES:** General Chemistry and Qualitative Analysis (aka General Chemistry II, or CHM2046) covers the basic concepts, theories and terms related to chemical equilibria, thermodynamics, elemental characteristics, and the chemical potentials associated with chemical species in systems covered in the course. The course will focus on major scientific developments and their impacts on society, science and the environment, and the relevant processes and potentials that govern and characterize the discussed chemical systems. Students will formulate empirically-testable hypotheses derived from the study of these systems, apply logical reasoning skills through scientific

criticism and argument, and apply techniques of discovery and critical thinking to evaluate potential outcomes of chemical processes. In addition to the described educational objectives of the course, it is also expected that preparatory objectives will be met and surpassed, with regard to rendering students equipped for success in future courses in the physical sciences, by way of a sound competency with the CHM2046 material and how it relates to earlier studies (CHM2045 and earlier) and later studies in chemistry and other scientific disciplines.

These objectives will be accomplished through interactive participation in the course lectures and discussion sections, and individual work done on provided guided and structured homework resources. Successful achievement will be assessed through weekly discussion section quizzes and monthly Progress Exams, as well as a Final Exam.

**GENERAL EDUCATION STUDENT LEARNING OUTCOMES:** The following learning outcomes (see table below) will be assessed through monitored Discussion Section preparation and participation, as well as through online assessments and progress (mid-term) examinations and final examinations.

**GENERAL EDUCATION STUDENT LEARNING OUTCOMES, continued:**

Area	Institutional Definition	Institutional SLO
<b>CONTENT</b>	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.
<b>COMMUNICATION</b>	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.
<b>CRITICAL THINKING</b>	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.