General Chemistry I
CHEM 2045

The instructor reserves the right to make changes or corrections to this syllabus at any time. Students will be notified when any changes are made via an announcement on canvas.

Course Overview

Description

CHM 2045 and CHM 2045L constitute the first 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, CHM2045 serves to teach: the scientific method, skills for problem solving, general chemistry knowledge, and a connection to the principles that govern the natural world.

INSTRUCTOR:

DR. MARTINA SUMNER Flint #250 E-mail (for administrative purposes): m.sumner@chem.ufl.edu	**Office Hours (Flint #250):** MWF 8:25 to 9:20 am (excludes Mondays), 10:35 to 11:35 am, 1:50 to 2:30 pm, 4 to 4:30 pm (excludes Fridays)

REQUIRED MATERIALS:

- Tophat subscription for in class clicker questions.
- nonprogrammable, scientific calculator (TI) or casio, TI-36 does quadratic function which will be helpful in chm2046
- Aleks (see below)

RECOMMENDED MATERIALS:

- Silberberg and Amateis, 8th ed (PLAs will have sample problems from the 8th ed- see below), Chemistry, The molecular nature of matter and change, can get ebook for less than $50 for 5 years – available for a limited time https://www.bsd.ufl.edu/G1CO/IPay1f/start.aspx?TASK=INCLUDED

ALEKS: Two percent of the course grade will be based on completion of the Aleks prep course. The deadline for completion of the Aleks prep course is **Friday, September 6th.** The following shows the points you can earn based on completion:

% ALEKS Completion	0 – 69%	70 – 79%	80 – 89%	90 – 98%	99 - 100%
% of grade earned	0%	0.5%	1.0%	1.5%	2.0%

For more info and how to register please see https://www.chem.ufl.edu/undergraduate/aleks/

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

4 Progress Exams	60%
Final Cumulative Exam	23%
Aleks	2%
Clickers/Worksheets	5%
Pre-lecture assignments (PLA)/Homework (HW)	5%
Progress Checks (Proficiency quizzes)	5%
TOTAL	100%

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

90-100% = A	83-85.9% = B+	73-76.9% = C+	66-68.9% = D+	< 60 = E
86-89.9% = A-	80-82.9% = B	69-72.9% = C	63-65.9% = D	
	77-79.9% = B-		60-62.9% = 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

ONLINE PRE-LECTURE ASSIGNMENTS (PLA)/HOMEWORK (HW): Five percent of the course grade will be based on online pre-lecture assignments through canvas. Each pre-lecture assignment is due before class. Homework assignments will also be due several times during the week. You should also work **all** sample problems, follow up problems, and multiple end-of-chapter problems for each chapter.

PROGRESS CHECKS: Five percent of the course grade will be based on progress checks. These progress checks will include the progress checks administered on Wednesdays and the proficiency quizzes. We will have at least 4 progress checks in class on Wednesdays on canvas (make sure you have a way to connect to canvas). You must work individually on these questions. Treat the progress checks as a mini exam (as a trial to see whether you are prepared for an exam). You will also take 3 proficiency quizzes. **PROFICIENCY QUIZZES (PQs):** This semester, CHM2045 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 CHM2045 in correlation with quiz performance. All students, irrespective of whether they wish to participate in the study, will complete three Proficiency quizzes over the course of the semester as part of their regular workload. These quizzes will contribute for a total of 2-% of the course grade, which is included in the 5-% represented by the Quiz category. Students will be randomly assigned to one of three 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 August 30, 2019. 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 (have your exam and quiz scores

collected for research purposes), you still must take the Proficiency quizzes. Each quiz is designed to be completed within a 60-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.

In addition to the quizzes, two surveys will be administered through Canvas – the first after the first during-term exam and the second between the last during-term exam and 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

CLICKERS/WORKSHEETS: Five percent of the course grade will be based on in-class clicker questions and weekly discussion worksheets. Clicker questions will be asked throughout class. You can earn points in class by correctly answering clicker questions through TopHat. Each class day will be worth 3 points regardless of how many questions were asked. You can only receive credit for participating in the clicker questions from your registered period. Clicker questions start counting towards your grade on Wednesday, August 28.

WORKSHEETS: There will be a worksheet every week unless otherwise noted. The first discussion classes meet the week of August 26, the last one the week of November 18. You can earn 3 points by completing worksheets in your assigned discussion sections. Group work is highly encouraged. Working on the worksheet prior to your discussion class is also highly encouraged.

DISCUSSION CLASSES/WORKSHEETS: The Discussion Classes meet every week and your attendance is expected unless otherwise noted (starts week of August 26). Your discussion section will contain weekly worksheets that will count toward your overall grade. You must go to your assigned discussion section to receive credit for the worksheet. The worksheet will be posted to canvas by Monday night. You may start working on it before you come to discussion. Form groups of 2 to 3 students and work on it together. Any grade discrepancy needs to be addressed within a week of posting grades to canvas (an announcement will be posted to canvas). If you missed a discussion section and show your completed worksheet to your TA the following week you will receive half credit. Any worksheet that is later than a week is worth no points.

STUDYING: This is an intense course. You will have to work hard to earn the grade you desire. Get help early. Don't wait to the last minute. Remember you are the one that is responsible for studying the material and making sure you know it.

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 or before/after lectures (if time permits). If this is not possible, visit the CLC (see

below). Please be prepared before coming to office hours, bring specific questions and your previous work.

CHEMISTRY LEARNING CENTER (CLC): There is free help available from graduate student teaching assistants in the CLC Monday through Friday (about 8:30 to 6 pm) in JHH (Hernandez) Hall 105. 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 online. Additionally, there is the teaching center located on the ground floor of Broward Hall, if you'd like to use that resource. Their web site is http://www.teachingcenter.ufl.edu.

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.

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/.

CLASS DEMEANOR: In order to have an optimal learning environment, the classroom needs to be free of disruptions. Therefore, it is expected that students come to class on time and leave only when class is concluded by the instructor, and that the class is not disrupted by student talking or cell phone noises. See the following website for acceptable classroom behavior: https://osa.med.ufl.edu/about/classroom-behavior/

Expected classroom behavior:

1. Take responsibility for your education. Attend every class. Get to class on time. Come prepared to class (PLA)
2. If entering the classroom after the instructor has started class please come in the back or side doors, do not cross in front of the instructor.
3. If leaving before the instructor has released the students please exit through the back or side doors.
4. Have your phone on silent.
5. Listen (pay attention) when the instructor talks.
6. Be courteous to your fellow students; do not have private conversations.

COURSE SCHEDULE (the lecture schedule is tentative, but exam dates will not change)

PLANNED LECTURE AND EXAM SCHEDULE	Chapters
Aug 21: Intro and Review: Atoms, Molecules, and Ions (1)	1–2
Aug 23-28: Stoichiometry and Quantitative Chemistry (3)	3
Aug 30 - Sept 9: Aqueous Chemical Reactions (4)	4
PROGRESS EXAM 1 – Tuesday, September 10 (8:20−9:50 pm)	**Cumulative**
Sept 11-16: Gases (3)	5
Sept 18-23: Thermochemistry (3)	6
Sept 25–Oct 2: Kinetics: Rates of Reaction and Rxn Mechanisms (4)	16
PROGRESS EXAM 2 – Monday, October 7 (8:20−9:50 pm)	**Cumulative**
Oct 9-11: The Nature of Light and Quantum Mechanical Model (2)	7
Oct 14-18: Electron Configuration and Periodic Trends of Elements (3)	8
Oct 21-23: Types of Chemical Bonding (2)	9
Oct 25-Nov 1: Lewis Structures and Molecular Geometry (4)	10
PROGRESS EXAM 3 – Thursday, November 7 (8:20−9:50 pm)	**Cumulative**
Nov 4-6: Theories of Covalent Bonding (2)	11
Nov 8-18: Intermolecular Forces of Attraction; Liquids and Solids (4)	12
Withdrawal deadline Monday, November 25 by 11:59 pm	
Nov 20-25: Solutions and Colligative Properties (3)	13
Dec 2: review for exam 4	
PROGRESS EXAM 4 – Monday, December 2 (8:20−9:50 pm)	
Dec 4: review for final exam	
FINAL EXAM – Monday, December 9 (12:30 to 2:30 pm)	**Cumulative**

OFFICIAL UF HOLIDAYS (no classes): Monday, Sept. 2 (Labor Day), Friday, Oct. 4 (Homecoming), Monday, Nov. 11 (Veteran's Day), Wednesday through Friday, Nov 27 – 29 (Thanksgiving)

EXAMS: Exams will be taken in the evenings outside of class and the Exam Room Assignments will be posted to canvas. 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 UF ID card. No notes, papers, cell phones, or other electronic devices can be in view during exams.
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.
Exam Grade Disputes: Any and all exam grade disputes or Scantron confirmations must be performed within one week of the scheduled exam date. Bubbling errors will not be negotiated. A 5-point penalty will be applied if your name comes back on the "no match" list from the scanning center (i.e. your UF-ID could not be found). A 5-point penalty will be applied if you took the exam in the incorrect room (i.e. if you took the exam in another instructor assigned room). A 20% penalty (or 30 points) will be applied if you fail to bubble in a form code.
To alleviate the stress of potential issues that do not fall under officially-sanctioned absences, we've incorporated an "average/replace" policy (the lowest of the four progress exams will be replaced by the average of the four progress exams). This "average/replace" policy will help to minimize the impact of a single poor performance but it will not completely disappear. Example: exam 1 140, exam 2 70, exam 3 100, exam 4 130 so average replace 110, so the 70 will be replaced with 110.

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.

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.

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.

SPECIFIC GOALS OF CHM2045: You will be required to analyze scientific concepts and think critically. This means being able to answer both quantitative (mathematical) and conceptual (qualitative) multiple choice problems in a limited period of time. Additionally you will have to write or orally communicate during your discussion periods. We will also demonstrate how these topics can be applied to the scientific method and how observation and experimentation leads us to the development of scientific theories. To achieve this, students will be introduced to the following concepts from the textbook. You will review the importance of chemistry in our everyday lives. You will be required to utilize the methods of science as a logical means of problem solving through critical thinking. This means you must

analyze information carefully and logically from multiple perspectives, using discipline specific methods, and develop reasoned solutions to problems. To ensure your competency in these concepts you will be required to complete online homework assignments and take quizzes and exams that require critical thinking, analysis of problems and drawing conclusions.

Critical Thinking: Critical thinking skills are essential in the general chemistry course. There are six criteria by which we promote critical thinking: 1. Information acquisition: Identifying and differentiating questions, problems and arguments. 2. Application: Assessing the suitability of various methods of reasoning and confirmation when approaching a problem. Students are taught to develop hypotheses and to find support and limitations associated with their hypotheses. 3. Analysis: Identifying and analyzing stated and unstated assumption and using logical reasoning to evaluate different viewpoints. 4. Synthesis: Students are encouraged to formulate questions and problems, construct arguments to address such questions and be able to effectively communicate conclusions. 5. Communication: In discussion of alternative points of view, students will be encouraged to criticize or defend their arguments with the use of logical reasoning and evidence. 6. Evaluation: Assessing the quality of evidence and reasoning to draw reasonable conclusions.

Mathematics: It is crucial in the general chemistry course to be competent in mathematics. Listed are the criteria by which we promote understanding and application of math: 1. Information acquisition: Students learn to select data that is pertinent to solving a problem. 2. Application: Use of algebraic, geometric and statistical reasoning to solve problems. 3. Analysis: Interpret and draw conclusions from formulas, graphs and tables. 4. Synthesis: To associate patterns and observations to more abstract principles and to consider specific applications of such principles. 5. Communication: Communicating information symbolically, graphically, numerically and verbally. 6. Evaluation: Estimate and verify solutions to mathematical problems to determine reasonableness, compare alternatives and select optimal results and understand the limitations of mathematical and statistical methods.

DISCLAIMER: This syllabus represents my current plans and objectives. If those need to change as the semester progresses, then the changes will be communicated to the class clearly. Check elearning/canvas daily for any pertinent announcements.