CHM2095 – CHEMISTRY FOR ENGINEERS – FALL 2021

GENERAL INFORMATION

INSTRUCTOR: Dr. Maria Korolev
Email (for administrative purposes): Email via Canvas
Office hours: Mondays, Wednesdays, and Fridays from 9:35am to 10:25am (in person in FLI 258) and 1:55pm to 2:45pm (online on Zoom).

COURSE DELIVERY: Lectures will be delivered in a synchronous HyFlex format. Lectures will be held in CLB 130 from 8:30am to 9:20am on Mondays, Wednesdays, and Fridays. Students can attend in-person or via Zoom. The Zoom link will be posted on the Canvas homepage. Discussion sections will be held on Zoom and the links will also be posted on the Canvas homepage. Your discussion section will meet synchronously on Thursdays at the time listed on your schedule. Exams will be held online.

COURSE DESCRIPTION: CHM2095 constitutes the first semester of the two term sequence of chemistry for engineers, CHM2095/2095L - CHM2096/2096L. As both a general education requirement and major's course, CHM2095 serves to teach: the scientific method, skills for problem solving, general chemistry knowledge, and a connection to the principles that govern the natural world. Prerequisite information and credit suitability can be found in the Undergraduate Catalog.

COURSE MATERIALS: Required: iClicker software and ALEKS Prep Access
Recommended: Any edition of Chemistry: Molecular Nature of Matter and Change by Silberberg. You may opt-in to the Silberberg 8th edition eText for a discounted price via UF All Access for a limited time: https://www.bsd.ufl.edu/allaccess

CANVAS: Our syllabus, gradebook, files, class announcements, and other pertinent info for the course will be posted on Canvas (http://elearning.ufl.edu). 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 or technical assistance, visit http://helpdesk.ufl.edu/.

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. Office hours are also available by appointment, if needed. Please be prepared before coming to office hours. Questions about grades will not be discussed during office hours due to FERPA.

TA OFFICE HOURS: Your teaching assistants will hold office hours during the week in the Chemistry Learning Center (CLC) in CCB 105. Their schedule and Zoom links will be posted on Canvas.

WORKLOAD: As a Carnegie I University, UF is required to assign at least 2 hours of work per week outside of class per every contact hour. Since this is a 3-credit course, that amounts to 6 hours of outside of class work per week. This work includes reading/reviewing assigned material, practicing problem-solving, synthesizing information prior to exams, and other self-determined study tasks.

BROWARD TEACHING CENTER: The Broward Teaching Center provides drop-in tutoring for chemistry and other subjects. While they have availability, they also offer free tutoring sessions by appointment. They also hold exam review sessions and provide an exam study packet. You can find more information on their website: http://www.teachingcenter.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.

NETIQUETTE: All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions, and chats. Please be mindful of your comments and responses, and make sure that they are respectful and inclusive to all participants.

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

Dates	Topics (# of lectures)	Silberberg Chapters
Aug 23	Introduction and Review (1)	Chap. 1-2
Aug 25 – Aug 27	Mass Relations and Stoichiometry (2)	Chap. 3
Aug 30 – Sep 8	Aqueous Reactions (4)	Chap. 4
Sep 10 – Sep 15	Gases (3)	Chap. 5
Sep 17	Review	Cumulative
Sep 20	**Progress Exam 1 (8:20pm-10:20pm)**	**Cumulative**
Sep 22 – Sep 29	Enthalpy & Calorimetry (4)	Chap. 6
Oct 1 – Oct 11	Chemical Kinetics (4)	Chap. 16
Oct 13 – Oct 15	Quantum Mechanical Model (2)	Chap. 7
Oct 18	Review	Cumulative
Oct 18	**Progress Exam 2 (8:20pm-10:20pm)**	**Cumulative**
Oct 20 – Oct 25	Electron Configuration and Periodic Trends (3)	Chap. 8
Oct 27 – Oct 29	Chemical Bonding Models (2)	Chap. 9
Nov 1 – Nov 8	Molecular Geometry (4)	Chap. 10
Nov 10 – Nov 12	Covalent Bonding Theories (2)	Chap. 11
Nov 15	Review	Cumulative
Nov 17	**Progress Exam 3 (8:20pm-10:20pm)**	**Cumulative**
Nov 19 – Dec 1	Intermolecular Forces, Liquids and Solids (4)	Chap. 12
Dec 3 – Dec 8	Properties of Solutions (3)	Chap. 13
Dec 11	**Final Exam (3:00pm-5:00pm)**	**Cumulative**

Holidays (no classes): September 6th, October 8th, November 11th, November 24th – 26th

GRADING

GRADE BREAKDOWN: Grades for the term will be determined as follows:

3 Progress Exams @ 20% each	60%
Final Cumulative Exam	23%
Engineering Mini-Projects	7%
Homework	5%
iClicker	3%
ALEKS Prep	2%
TOTAL	100%

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

A	A-	B+	B	B-	C+	C	D+	D	D-	E
≥90%	≥86%	≥83%	≥80%	≥77%	≥73%	≥69%	≥66%	≥63%	≥60%	<60%

Information on current UF grading policies for assigning grade points can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

ENGINEERING MINI-PROJECTS: Part of your grade will be determined by engineering projects done during your discussion sections. There will be three projects spread over the semester that will relate to material covered in lecture. Each project will be done over three weeks to be done both during discussions and outside the discussions. You will be graded on the scientific merit of your work in groups. More of the details of the activities will be discussed during the first class meeting. These activities are part of an initiative to improve this section of general chemistry, and are tied to a research grant. Due to this, you will need to complete a consent form as well as pre- and post-semester surveys. Your compliance with this will be worth points that contribute to your overall mini-project score. Your attendance is required in your registrar assigned section. If you have an unexcused absence during the discussion period for a given week, then you will score a 0 on the assignment for that week.

ICLICKER: Three percent of the course grade will be based on your in-class clicker score. You can earn points in class by correctly answering clicker questions through iClicker. The in-class questions will be presented during class in pace with the lecture. The lowest three clicker grades will be dropped at the end of the semester. Requirements for class attendance are consistent with university policies that can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

HOMEWORK: Five percent of the course grade will be based on online pre-class and after-class homework assignments through Canvas. Each assignment has a displayed deadline. Failure to at least access a homework assignment before its due date will result in the loss of ability to access that assignment for the remainder of the semester. Students that miss a homework assignment deadline due to an excused absence can request an extension by contacting the instructor. You will have multiple attempts to answer the homework assignments. The lowest three homework grades will be dropped at the end of the semester.

ALEKS PREP: Two percent of the course grade will be based on completion of the ALEKS prep course (https://www.chem.ufl.edu/undergraduate/aleks/). The deadline for completion of the ALEKS prep course is Friday, September 10th. The following shows the points you can earn based on completion:

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

EXAMS: Exams will be taken in the evenings outside of class on the dates listed in the course schedule. Exams will be administered from 7:20pm to 10:20pm EST via Honorlock, and you will have 2 hours within this time block to complete the exam. Each exam will cover both recent chapters and previous material which the student needs to have mastered. Exam questions will be a similar format to questions you have seen on homework assignments, worksheets, practice exams, etc. They may include multiple choice, numeric entry, multiple answers, multiple dropdown, fill in the blank, and formula questions. 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 have pencils, scrap paper, and your UFID card. No notes, cell phones or other electronic devices can be in view during exams.

To alleviate the stress of exams, we've incorporated an "average/replace" policy (the lowest of the three progress exams will be replaced by the average of the three progress exams). This "average/replace" policy will help to minimize the impact of a single poor performance but it will not completely disappear. For example, if a student has: Exam 1 score of 180/200, Exam 2 score of 110/200, Exam 3 score of 160/200, then their average/replace score will be 150/200 and it will replace the original Exam 2 score.

Any and all exam grade disputes or must be performed in writing via email within one week of the grade being posted on Canvas.

HONORLOCK: This course uses Honorlock for proctoring your exams. In order for you to take exams in this course you will need a government issued photo ID (or your Gator-1 ID), a working webcam and microphone on your computer, a stable internet connection, and the Google Chrome browser (https://chrome.com) on your computer. Before and during your exam you will need to follow the Honorlock proctor's instructions. Please familiarize yourself with the Honorlock student guide: https://dce.ufl.edu/media/dceufledu/pdfs/Honorlock-Student-Guide-UF-Update.pdf and the Honorlock Student Exam Preparation Information: https://dce.ufl.edu/media/dceufledu/pdfs/Honorlock-Student-Exam-Preparation-Information.pdf . Full audio and video presence is required for proctored tests administered by Honorlock. Honorlock support is available 24/7. If you encounter any issues, you may contact them by live chat, phone (855-828-4004), and/or email (support@honorlock.com).

EXAM ABSENCES: 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 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.

UNIVERSITY POLICIES

COVID-19 PRACTICES: In response to COVID-19, the following practices are in place to maintain your learning environment, to enhance the safety of our in-classroom interactions, and to further the health and safety of ourselves, our neighbors, and our loved ones:

If you are not vaccinated, get vaccinated. Vaccines are readily available at no cost and have been demonstrated to be safe and effective against the COVID-19 virus. Visit this link for details on where to get your shot, including options that do not require an appointment: https://coronavirus.ufhealth.org/vaccinations/vaccine-availability/. Students who receive the first dose of the vaccine somewhere off-campus and/or outside of Gainesville can still receive their second dose on campus.

You are expected to wear approved face coverings at all times during class and within buildings even if you are vaccinated. Please continue to follow healthy habits, including best practices like frequent hand washing. Following these practices is our responsibility as Gators.

Sanitizing supplies are available in the classroom if you wish to wipe down your desks prior to sitting down and at the end of the class. Hand sanitizing stations will be located in every classroom.

If you sick, stay home and self-quarantine. Please visit the UF Health Screen, Test & Protect website about next steps, retake the questionnaire and schedule your test for no sooner than 24 hours after your symptoms began. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 (or email covid@shcc.ufl.edu) to be evaluated for testing and to receive further instructions about returning to campus. UF Health Screen, Test & Protect offers guidance when you are sick, have been exposed to someone who has tested positive or have tested positive yourself. Visit the UF Health Screen, Test & Protect website for more information.

Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work. If you are withheld from campus by the Department of Health through Screen, Test & Protect you are not permitted to use any on campus facilities. Students attempting to attend campus activities when withheld from campus will be referred to the Dean of Students Office.

Continue to regularly visit coronavirus.UFHealth.org and coronavirus.ufl.edu for up-to-date information about COVID-19 and vaccination.

AUDIO/VISUAL POLICY: Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

Zoom sessions: Your discussion sections will meet on Zoom and your participation is required. Since the pedagogical approach of this course depends heavily on student engagement and interaction, you are required, at a minimum, to participate in class activities through the audio function of Zoom. Your video presence is invited as well. Zoom sessions are not recorded.

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.

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. The DRC has a 4 business day policy to submit Accommodated Testing Requests (ATRs).

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/

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/.

COURSE OBJECTIVES

GENERAL EDUCATION PROGRAM OBJECTIVES: 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. These objectives will be accomplished through participation in the course lectures and discussion sections, and individual work done on homework assignments and assessments.

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: 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.