

CHM2095 – Chemistry for Engineers – Fall 2018

INSTRUCTOR: Dr. Maria Korolev

Email (for administrative purposes): Email via Canvas

Office hours: Tuesdays and Thursdays periods 6 - 7 in Keene-Flint 251/258

COURSE DESCRIPTION: CHM 2095 constitutes the first semester of the two term sequence of general chemistry, CHM 2095/2045L - 2096/2046L. 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. A minimum grade of a C is required to progress to CHM2046 or CHM2096, as well as a passing score in MAC1147 (or equivalent).

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

Dates	Topics (# of lectures)	Silberberg Chapters
Aug 22 – 24	Introduction and Review (1-2)	Chap. 1–2
Aug 27 – Aug 31	Mass Relations and Stoichiometry (3-4)	Chap. 3
Sep 5 – 10	Aqueous Reactions (3)	Chap. 4
Tuesday, Sep 11	Progress Exam 1 (8:20pm-9:50pm)	Cumulative
Sep 12 – 17	Gases (3)	Chap. 5
Sep 19 – Sept 26	Enthalpy & Calorimetry (3-4)	Chap. 6
Sept 28	The Nature of Light (1)	Chap. 7
Oct 1 – 5	Chemical Kinetics (3)	Chap. 16
Tuesday, Oct 9	Progress Exam 2 (8:20pm-9:50pm)	Cumulative
Oct 10	Quantum Mechanical Model (1)	Chap. 7
Oct 12 – 17	Electron Configuration and Periodic Trends (3)	Chap. 8
Oct 19 – 22	Chemical Bonding Models (2)	Chap. 9
Oct 24 – 31	Molecular Geometry (4)	Chap. 10
Monday, Nov 5	Progress Exam 3 (8:20pm-9:50pm)	Cumulative
Nov 5 – 7	Covalent Bonding Theories (2)	Chap. 11
Nov 9 – 19	Intermolecular Forces, Liquids and Solids (4)	Chap. 12
Nov 26 –30	Properties of Solutions (3)	Chap. 13
Monday, Dec 3	Progress Exam 4 (8:20pm-9:50pm)	Cumulative
Dec 5	Review	Cumulative
Tuesday, Dec 11	Final Exam (10:00am-12:00pm)	Cumulative

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

COURSE MATERIALS:

Required: TopHat Subscription for in-class clicker questions.

Recommended: Chemistry Textbook by Silberberg (any edition). There is an option to opt-in to the Silberberg 8th edition eText by September 14th for a discounted price via UF All Access.

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 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 (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. Questions about grades will not be discussed during office hours due to privacy regulations.

CHEMISTRY LEARNING CENTER (CLC): There is *free* help to be had from graduate student teaching assistants in the CLC Monday through Friday in Joseph 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 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>.

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.

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

4 Progress Exams @ 15% each	60%
Final Cumulative Exam	23%
Engineering Mini-Projects	7%
TopHat Assignments	5%
Canvas Homework	3%
ALEKS Prep Completion	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.

TOPHAT ASSIGNMENTS: Five percent of the course grade will be based on TopHat assignments. Each day will comprise of both pre-class questions and in-class questions. The pre-class questions will be due just before class and you can do them at your own pace. The in-class questions will be presented during class in pace with the lecture. You can earn points in class by correctly answering clicker questions through TopHat. The lowest five 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>

CANVAS HOMEWORK: Three percent of the course grade will be based on online 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 homework for the remainder of the semester. Students that miss a homework 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. The deadline for completion of the ALEKS prep course is Monday, 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 and the exam room assignments will be posted. 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, section number, and your UF ID card. No notes, papers, cell phones or other electronic devices can be in view during exams.

No makeup (“do over”) progress exams will be given for any reason. If you must be absent for an exam due to a documented and approved academic or UF athletic conflict, bring the documentation to your instructor at least *one week prior* to the scheduled exam and an early conflict exam will be scheduled for you. If you are absent for an exam due to an unpredicted documented medical reason, you must contact the instructor as soon as possible. You also need to contact the Dean of Student’s Office to get your

excuse verified. After corresponding with both the instructor and the DSO, your missed exam score will be replaced by your pro-rated final exam score when calculating your grade.

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. For example, if a student has: Exam 1 score of 140/150, Exam 2 score of 70/150, Exam 3 score of 120/150, and Exam 4 score of 130/150, then their average/replace score will be 115/150 and it will replace the original Exam 2 score.

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.

University examination and reading day policies can be found at:

<https://catalog.ufl.edu/UGRD/academic-regulations/examination-policies-reading-days/>

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.

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).

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 feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

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 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.