General Chemistry I

CHEM 2045

Spring 2021 (Online)

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.

INSTRUCTOR AND TA INFORMATION

DR. STEVEN HARRIS Office: CCB 302A E-mail: Please email via Canvas (for administrative purposes only): steven.harris@ufl.edu	**Office Hours (via Zoom):** MWF, (10:00 to 11:30 am), https://ufl.zoom.us/j/98015151489?pwd=SnhvL0YxQ3BJQ3B6R2dzc2RzR0VsZz09 Meeting ID: 980 1515 1489 Passcode: 0i092j When you attend office hours, use of your camera and microphone is highly encouraged.
GRADUATE TEACHING ASSISTANTS Stowell,Emma A - stowelle@chem.ufl.edu Ghude, Arijeet - arijeet.ghude@ufl.edu Wijerathne,Namodhi - wijerathne.h@chem.ufl.edu	

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.

COURSE MATERIALS

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
- You will also need a non-graphing/non-programmable scientific calculator.
- Optional: eBook of Student Solutions Manual made specifically for this course. Title: GENERAL CHEMISTRY - CHM 2045, ISBN: 9781307629521 and can be purchased here: https://create.mheducation.com/shop/ through McGraw Hill or through UF Bookstore.
- Aleks Prep (see below)

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, January 29th.** 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/

COURSE GRADING

GRADES

Grades for the term will be determined as follows:

3 Progress Exams	60%
Final Cumulative Exam	23%
Aleks	2%
Worksheets	5%
Pre-lecture assignments (PLA)/Homework (HW)	5%
Chapter Quizzes/Proficiency (Research) 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

POSTED GRADES

Should a student wish to dispute any grade received in this class, the dispute must be in writing (via e-mail to steven.harris@ufl.edu) and submitted within one week of the grade being posted to canvas. 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.

ONLINE PRE-LECTURE ASSIGNMENTS (PLA)/HOMEWORK (HW)

Five percent of the course grade will be based on online pre-lecture (beginning in chapter 4) and homework assignments through Canvas. Each pre-lecture assignment is due at 12 PM of the posted lecture date (due dates will show up on Canvas). These assignments are designed to be completed prior to the lecture and will require reading from the textbook. To be successful you will need to complete pre-lecture assignments in preparation for each class day. These assignments will be posted on Canvas under the quizzes tab (and under Modules for each chapter). 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. You should also work **all** sample problems, follow up problems, and multiple end-of-chapter problems for each chapter. You will have multiple attempts to successfully answer the homework assignments. Up to three assignments will be dropped at the end of the semester from the PLA/HW category. Additional HW assignments for each chapter can be found under Quizzes, then scroll down to Practice Quizzes. These are not worth any points.

CHAPTER QUIZZES

3.5 percent of the course grade will be based on chapter quizzes. These quizzes are checks on your progress, i.e. are you ready for the upcoming exam. The quizzes will be due one day after the due date of the corresponding chapter's homework by 11:59 pm. You must work individually on these quizzes to gauge your mastery of the material and to give you a reality check on what you know or don't know. Treat the progress checks as a mini exam (as a trial to see whether you are prepared for an exam).

PROFICIENCY QUIZZES (PQS) AND PROBLEM-SOLVING

1.5 percent of your grade will come from the Proficiency Quizzes and Problem Solving Study.

This semester, CHM2045 will be part of (1) new and (2) ongoing Chemical Education Research projects within the Department of Chemistry at UF. The overall contribution to your course grade for both research studies is 1.5-%.

(1) The New study will focus on Problem Solving skills and approaches and the change over the course of the semester. The study includes two short surveys, including demographics question on the first survey and questions about problem-solving skills and how students approach difficult word problems related to chemistry topics on both surveys. The first will occur before the first during-term exam, and the second will occur between the last during-term exam and the cumulative final exam. Both surveys will focus on students' problem-solving skills and how students approach difficult word problems related to chemistry topics. The same questions will be used for each Survey, with the addition of demographic questions (i.e., age, gender, ethnicity, etc.) to the first Survey. The purpose of the early versus late semester surveys is to determine the level of development regarding problem-solving skills before significant instruction has occurred and any gains as the semester progresses. Over the course of the semester, all students will complete the same number of surveys that contribute to the Survey category of the gradebook.

To participate in the study, students will complete the Informed Consent Form Survey through a Canvas Survey by January 20, 2021. 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 surveys to earn a portion of the course grade, and they are graded based on completion. If you do not wish to participate in the study and have your exam scores and survey data removed from the collected data, you still must complete the two surveys. We ask you to participate in the study since the data collected may lead to future improvements of CHM 1025/2045/2046 sequence.

(2) The ongoing study will consist of Proficiency Quizzes in the form of post-exam quizzes that open one-week after each during-term exam. The PQs will be released in sets of 3. The highest score of the set will contribute to your course grade while the lowest 2 scores of each set will be dropped. The PQs are intended to aid in review of material to prepare for the cumulative Final exam. Additionally, there will be 2 Surveys – one after PQ set 1 closes and the other after the last PQ set closes. The focus of the surveys is to gain insight into the study habits of general chemistry students regarding exams, quizzes, and the final exam, with the addition of demographic questions (i.e., age, gender, ethnicity, etc.) to the first survey.

Due to (2) being a different IRB study, there must be a separate Informed Consent survey. To participate in the study, students will complete the Informed Consent Form Survey through a Canvas Survey by January 20, 2021. 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 Proficiency Quizzes and surveys to earn a portion of the course grade, and they are graded based on correctness and completion, respectfully. If you do not wish to participate in the study and have your exam scores and survey data removed from the collected data, you still must complete the two surveys. We ask you to participate in the study since the data collected may lead to future improvements of CHM 1025/2045/2046 sequence.

DISCUSSION CLASSES/WORKSHEETS

The Discussion Classes meet weekly and your attendance is **mandatory**. 5 points will be awarded when you attend your TA's zoom session. The weekly chapter 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. A canvas worksheet quiz will open on Wednesday and due by 11:59 pm (~5 questions randomly selected from the worksheet). Any grade discrepancy needs to be addressed within a week of posting grades to canvas to your TA. The first discussion classes meet the second week of classes and the zoom link will be provided by your TA.

EXAMS

Exams will be administered at night from 7:30 pm to 10:30 pm (Eastern time, time may be adjusted slightly) via Honorlock. Exam questions will consist of questions similar to the HW/PLA/worksheet/quizzes/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, natural log - ln, root, and exponent (scientific notation) functions).

Any and all exam grade disputes must be performed within one week of the scheduled exam date. 2 points will be deducted from your score if you neglect to sign the Honor Pledge question at the end of every exam.

Exam Conflict/Absence Policy: No make-up 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 attending an exam, you must do the following: (1) contact the Dean of Students office and have them confirm your conflict documentation and have them email their confirmation to me, and then you must (2) contact the current instructor of the course as soon as you are no longer ill (no rush – wait until you are well) and/or as soon as you are able to do so. Failure to do these two steps will result in a zero score for the missed exam. (More information regarding this policy can be found in the *General Chemistry Exam Absence Policy* found on Canvas.)

Progress Exam "Average/Replace" Policy: (Applies to all students). No Progress Exam scores will be dropped for any reason. 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 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. Example: Exam 1, 140, exam 2, 100, and Exam 3, 180. The average of the 3 exams is 140. So the lowest score of 100 will be replaced with 140. Another example: Exam 1, 150, Exam 2, 0 (missed), Exam 3, 180. Now, the average of the three exams is 110, so the 0 will be replaced with the 110. Please keep in mind that you MUST take all exams or its corresponding make-up.

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. https://warrington.ufl.edu/covid-19/information-for/for-students/honorlock-student-guide/ more info on Honorlock

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.

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).

HOW TO BE SUCCESSFUL IN THIS COURSE

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. Please contact the instructor via Canvas only. All academic inquiries must be made during Zoom 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

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 chm2045 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 chm2045 class.

GETTING HELP

For issues with or technical difficulties with Canvas, contact the UF Help Desk: https://lss.at.ufl.edu/help.shtml; (352)-392-HELP.

Other resources are available at http://www.distance.ufl.edu/getting-help for Counseling and Wellness resources, disability resources, resources for handling student concerns and complaints, and library desk support.

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.

2 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 and no average/replace, 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/.

NETIQUETTE

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions, and chats. http://teach.ufl.edu/wp-content/uploads/2012/08/NetiquetteGuideforOnlineCourses.pdf

CLASS SESSIONS

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 verbally 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.

COURSE SCHEDULE

The lecture schedule is tentative, but the exam dates will not change.

TENTATIVE SCHEDULE

Class date	**Topic**	**Before class**	**Silberberg 8th Ed. Chpts***
Jan. 11	Chapters 1-2	Read syllabus, familiarize yourself with canvas	Ch. 1-2
Jan. 13	Ch. 3.1/2 – The mole, Determining the formula of an unknown compound		Ch. 3.1/2
Jan. 15	Ch. 3.2/3 - Empirical formula, stoichiometry		Ch. 3.2/3
Jan. 18	**Martin Luther King Jr Holiday**		
Jan. 20	Ch. 3.4 - Stoichiometry		Ch. 3.4

Jan. 22	Ch. 4.1 through 3 solution concentration, writing net ionic eq and precipitation reactions	PLA Ch. 4.1-3	Ch. 4.1-3
Jan. 25	Ch. 4.4 acid-base reactions	PLA Ch. 4.4	Ch. 4.4
Jan. 27	Ch. 4.5 and 6 redox reactions	PLA Ch. 4.5/6	Ch. 4.5
Jan. 29	**Exam 1 (Ch. 1 - 4)** Ch. 4 review (no new material)		Ch. 1-4
Feb. 1	Ch 5.1/2/3 overview of gases, P, gas laws	PLA Ch. 5.1/2/3	Ch. 5.1/2/3
Feb. 3	Rearrangement of ideal gas law	PLA Ch. 5.4	Ch. 5.4
Feb. 5	KMT and real gases	PLA Ch. 5.5/6	Ch. 5.5/6
Feb. 8	Review of ch 5		Ch 5
Feb. 10	Forms of energy; enthalpy	PLA Ch.6.1/2	Ch. 6.1/2
Feb. 12	Calorimetry: Constant V and const. P	PLA Ch. 6.3	Ch. 6.3
Feb. 15	Stoichiometry of thermochemical rxn, Hess's Law, ΔH of formation	PLA Ch. 6.4/5/6	Ch. 6.4/5/6
Feb. 17	Ch 6 review		
Feb. 19	Chemical kinetics: expressing reaction rate; rate law and its components	PLA Ch. 16.1/2/3	Ch. 16.1/2/3
Feb. 22	Integrated rate laws	PLA Ch. 16.4	Ch. 16.4
Feb. 24	Reaction mechanisms	PLA Ch. 16.6	Ch. 16.6
Feb. 26	Theories of chemical kinetics and catalysis	PLA Ch. 16.5/7	Ch. 16.5/7
March 1	Ch 16 review		

March 3	Nature of light	PLA Ch. 7.1	Ch. 7.1
March 5	Quantum mechanical model of atom	PLA Ch. 7.4, 8.1/2	Ch. 7.4
March 8	Spin quantum number, $m_{s;}$ effective nuclear charge, z_{eff}	PLA ch 8.1-2	Ch. 8.1/2
March 10	**Exam 2 (Ch. 5, 6, 7,16)** Ch 7 Review		
March 12	Trends in atomic properties (atomic size, ionic size)	PLA Ch. 8.3/4	Ch. 8.3-4
March 15	Ionic bonding model	PLA Ch. 9.1/2	Ch. 9.1/2
March 17	Covalent bonding model and bond energy	PLA Ch. 9.3/4	Ch. 9.3/4
March 19	Electronegativity and bond polarity	PLA Ch. 9.5/6	Ch. 9.5/6
March 22	Lewis structures, resonance, formal charge	PLA Ch. 10.1	Ch. 10.1
March 24	VSEPR	PLA Ch. 10.2	Ch. 10.2
March 26	Molecular shape and polarity	PLA Ch. 10.3	Ch. 10.3
March 29	Review ch 8-10		
March 31	Valence bond theory, modes of orbital overlap	PLA Ch. 11.1/2	Ch. 11.1/2
April 2	Molecular orbital theory (MO)	PLA Ch. 11.3	Ch. 11.3
April 5	Physical states; phase changes, heating curve calculations	PLA Ch. 12.1/2	Ch. 12.1/2
April 7	**Exam 3 (Ch. 8-11) April, 7 Review ch 8-11**		
April 9	Intermolecular forces, liquid state, and uniqueness of water	PLA Ch. 12.3/4/5	Ch. 12.3-5
April 12	The solid state: structure, properties, and bonding	PLA Ch. 12.6	Ch. 12.6/7

April 14	Types of solutions; why substances dissolve	PLA Ch. 13.1/2/3	Ch. 13.1-3
April 16	Solubility as an equilibrium process; concentration terms	PLA Ch. 13.4/5	Ch. 13.4/5
April 19	Colligative Properties	PLA 13.6	Ch. 13.6
April 21	Review ch 12 and 13		
April 24	**Final comprehensive exam Saturday, April 24 from 3 to 5 pm**		Ch. 1-13, 16

OFFICIAL UF HOLIDAYS (NO CLASSES)

Holidays (no classes): Monday, January 18th (Martin Luther King, Jr. Day). The University suggests Thursday, February 25 and Wednesday, March 24, as Spring Recharge Days for students. These dates will be discussed further in office hours and will be announced via Canvas.

FEEDBACK

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/."

UNIVERSITY POLICIES

UNIVERSITY POLICY ON ACCOMMODATING STUDENTS WITH DISABILITIES

Students requesting accommodation for disabilities must first register with the Dean of Students Office (http://www.dso.ufl.edu/drc/). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting

assignments or taking quizzes or exams. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

UNIVERSITY POLICY ON ACADEMIC MISCONDUCT

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity." You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit 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." It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: http://www.dso.ufl.edu/SCCR/honorcodes/honorcode.php."

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.

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. Students with disabilities should follow this procedure as early as possible.

UF MULTICULTURAL AND DIVERSITY AFFAIRS

Department within the Division of Student Affairs. Multicultural and Diversity Affairs (MCDA) celebrates and empowers diverse communities and advocates for an inclusive campus for all students across identities. MCDA is located on the second level in the student union. https://multicultural.ufl.edu/

UF TEACHING CENTER (CLAS)

Broward Hall, 352-392-2010 or to make an appointment 352-392-6420. General study skills and tutoring. teachingcenter.ufl.edu/

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/

COUNSELING AND WELLNESS CENTER

Visit counseling.ufl.edu/ or call 352-392-1575 for information on crisis services as well as non-crisis services.

GENERAL EDUCATION

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.

PHYSICAL SCIENCE 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 are accomplished through participation in the course, and individual work done on homework assignments and assessments.

GENERAL EDUCATION STUDENT LEARNING OUTCOMES

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.

Naturally, all three areas of learning outcomes will be assessed in all categories of graded assignment administered in CHM2045.

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 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.