

CHM 1046C Course Syllabus
Spring Session 2024
CRN 24655 (4 Credit Hours)

Instructor: [Patrick Fowler](#)

Email: All email contact involving personal or grade information must be through your [Canvas](#) Inbox or through your [Atlas email account](#).

Office Hours: The east campus science department can be contacted by email at easciencedept@valenciacollege.edu and by phone at 407-582-2311

Web Pages: All of the necessary class notes, homework, lab handouts, exam review sheets, and supplemental links for this class are in both [Course Materials](#) and [Canvas](#).

Prerequisite Completion of CHM 1045C with grade of C or better

Course Description

This course is a continuation of CHM 1045C and is designed to provide the student with an understanding of the fundamental concepts and principles of chemistry. Topics covered will be properties of liquids, properties of solutions, chemical reaction kinetics, chemical reaction equilibria, acid/base equilibria, solubility equilibria, thermodynamics, and electrochemistry. Laboratory illustrates principles of ionic equilibria within a framework of qualitative analysis.

Student Learning Outcomes

The basic learning outcome for this general chemistry course will be to develop an ability to solve and write scientific equations for basic quantitative problems involving chemistry, so that you can apply this knowledge to general scientific problems in various fields of science, medicine, and engineering.

Specifically, the student should learn how to qualitatively and quantitatively describe:

1. basic properties of liquids and chemical solutions
2. rates of chemical reactions
3. properties of acids and bases
4. chemical equilibrium of reactions involving gases, acid-base, pH buffers, ionic solubility, and complex ions
5. thermodynamics and the energies that drive chemical reactions
6. electrochemical reactions and their relation to thermodynamics and equilibrium

Also, upon completion of the laboratory portion, the student should be able to:

1. perform fundamental chemical laboratory techniques
2. make and record relevant experimental observations
3. qualitatively and quantitatively interpret the results

Required Texts

[Chemistry 2e from openstax.org](https://openstax.org)

The digital version (ISBN-13: 978-1-947172-61-6) can be viewed for free online, as a phone app, or as a pdf download. Hardcover (978-1-947172-62-3) and paperback (978-1-59399-578-2) versions are available by purchase through [Amazon](https://www.amazon.com).

[Advanced Experiments In General Chemistry 2](#), 2022 Edition.

Becker, Renee Y; 2022. (ISBN: 9781707712786, ISBN10: 1707712786)

Other Materials

A scientific calculator (or other calculating device) is required for every classroom module and laboratory session because solving quantitative problems is central to this course. Graph paper is often required for lab experiments, also.

Evaluation

Four one-hour exams, along with a comprehensive [final exam](#), will be given online.

The tests will be on paper, open-note, open-book, and submitted in Canvas.

A homework assignment will be given for each of the nine chapters covered.

There will be eleven laboratory experiments, each worth 20 points.

Your grade will be calculated as follows:

4 One-Hour Exams at 100 points each	400
1 Comprehensive Final	100
11 Lab Reports at 20 points each	220
9 Home Works at 10 points each	90
Total Points	810

Passing grades are assigned according to the percentage of total points:

A > 90 %, B > 80 %, C > 70 %, D > 60 %

A curve to the grading system is not normally needed or given.

Do not expect a higher grade if your performance is less than indicated for that grade.

No assignment grades are dropped and every assignment grade is included in your total.

Extra credit is not offered.

Final Exam Policy

Any student that misses the final exam will receive 0 points for that exam, which will be averaged in as part of the final grade.

Attendance Policy

Participation in every assignment and every lab is mandatory. It is your responsibility. Students may be withdrawn from the class by the instructor following one entire week of no participation in the course or contact with the instructor. If you are not going to participate for a full week, then you must communicate with your professor to determine if a successful completion is still possible.

Withdrawal Policy

Per Valencia Policy 4-07 (Academic Progress, Course Attendance and Grades, and Withdrawals), a student that withdraws from class before the established deadline for a particular term will receive a grade of "W." A student is not permitted to withdraw after the withdrawal deadline. The instructor will not withdraw any student because faculty-initiated withdrawal can have negative effects on the student's financial aid and immigration status, as well as because the student would then no longer be allowed to attend the class. Any student who withdraws from a class during a third or subsequent attempt in the same course will be assigned a grade of "F." Please refer to the [Valencia College Attendance Policy](#) for further information.

Academic Honesty

Copying someone else's work always results in you repeating the source's mistakes and never results in real learning or increased problem-solving skills for you. Therefore, the policy in this class is that everything submitted must be your individual or lab group's work. Study groups are acceptable and encouraged, working with lab partners is necessary, but do not cheat, copy, or obtain answers that are not your own on any exam, quiz, assignment, or lab report. Copying anyone else's work is unacceptable and will not be tolerated.

Plagiarism is also prohibited. Plagiarism is defined as claiming as your own a paper, report, article, or speech which in whole or in part was prepared by someone other than yourself. Cheating on an exam or copying someone else's laboratory report is also a violation of this policy.

A violation of this policy can result in failure of an assignment, the entire course, or your current status as an active student. The instructor can and will give you an F for the class if flagrant cheating is clearly evident. Each student is expected to be informed and compliant with the [college policy on academic dishonesty](#).

Lab Reports

Except for dry labs, which are also worth 20 points total, each lab experiment will have a pre-lab (5 - 10 points), as well as a data table with a set of post-lab questions (10 - 15 points combined). Assignments can be submitted either on a copy of the lab manual pages or on your own paper. The answers to the post-lab questions need to be in original, well-reasoned, complete sentences.

The pre-lab will be due prior to the beginning of the experiment, while the data table or dry lab will be due the following week after the experiment. Calculations for all numerical results must always be attached on a separate sheet of paper as well for each. No pre-lab or report sheet will ever be accepted for any credit if the calculation sheet is not included. Submit all lab assignments together with your partner(s) and always include all names.

Homework

A homework exercise, worth 10 points, will be assigned for every chapter. **Homework assignments are due one week after the respective chapter lecture has been completed.** Also, each student is expected to read the notes and/or text and to work through examples and exercises sufficiently enough to understand the material. Preparation for classes and exams is essential in order to perform well in this class.

Calculations for all numerical results must always be shown with all applicable equations, units, conversion factors, and significant figures included correctly. No lab or homework assignment will ever be accepted for any credit if the calculations are not complete.

Inclusion and Accessibility Statement

Valencia College and I are committed to supporting a very diverse body of students, including those with disabilities. If you have or believe that you may have a disability, you are encouraged to contact the [Office for Students with Disabilities](#) (OSD) as soon as possible and learn about the support that is available to you. Students with disabilities who qualify for academic accommodations must provide the instructor with a letter (NTI) from OSD and discuss their specific needs with the instructor, preferably during the first two weeks of class. OSD determines those accommodations based on appropriate documentation of disabilities.

All students are encouraged to make use of [online tutoring](#) and [other online services available](#) at Valencia College. Also, if you feel that you would be better served by an alternative delivery mode or means of assessment for course content, please contact the instructor to voice your concerns, as I strive to create a learning environment that is inclusive of as many different types of learners as possible.

Student Assistance Program

Valencia College wants all of its students to have a rewarding and successful college experience. To assist that purpose, Valencia students can get immediate help with issues dealing with stress, anxiety, depression, adjustment difficulties, substance abuse, time management as well as relationship problems dealing with school, home or work. [BayCare](#) Behavioral Health Student Assistance Program (SAP) services are free to all Valencia students and available 24 hours a day by calling (800) 878-5470. Free face-to-face counseling is also available.

Any student who has difficulty accessing sufficient food to eat, or who lacks a safe and stable place to live, and believes this may affect his or her performance in the course, is urged to meet with a Counselor in the [Advising Center](#) for information about resources that may be available from the college or community.

Expected Student Conduct

Valencia College is dedicated not only to the advancement of knowledge and learning but is concerned with the development of responsible personal and social conduct. By enrolling at Valencia College, a student assumes the responsibility for becoming familiar with and abiding the [Student Code of Conduct](#). The primary responsibility for managing the classroom environment rests with the faculty. Students who engage in any prohibited or unlawful acts that result in disruption of a class may be directed by the faculty to leave the class. Violation of any classroom or Valencia's rules may lead to disciplinary action up to and including expulsion from Valencia. Disciplinary action could include being withdrawn from class, disciplinary warning, probation, suspension, expulsion, or other appropriate and authorized actions.

Recording Device Policy

Valencia College and I are committed to giving you as many opportunities and resources to support your learning as possible. Therefore, you may record class lectures to review later. However, you do not have your peers' permission to record them, and they have a right to privacy. Therefore, your peers should not be in your recordings. You may not record class discussions, student presentations, labs, group work, and private conversations. Also, recordings are permitted for your own personal use only, and you would need to contact me first if you need any sharing options. Finally, these recordings are useful for review, but they are not substitutes for class participation and attendance. You still need to attend every class session. If you have any concerns or questions, please feel free to contact me.

Valencia Core Competencies addressed in this course

Valencia faculty has defined four interrelated competencies (Think, Value, Communicate, and Act) that prepare students to succeed in the world community. These competencies are outlined in the college catalog. In this course, through lecture and discussion, group work, and other learning activities, you will further develop your mastery of those competencies.

- 1) Think critically and make reasoned choices by acquiring, analyzing, synthesizing, and evaluating knowledge.
- 2) Make reasoned value judgments and responsible commitments.
- 3) Communicate by reading, writing, listening, and speaking effectively.
- 4) Act purposefully, reflectively, and responsibly by understanding and using both quantitative and qualitative information.

Grievance Procedure

Being proactive in your education is more crucial than anything else. Please speak with your instructor when you have significant academic concerns. If you feel a reasonable resolution cannot be achieved by discussion with your instructor, then you may submit a grievance report at <https://valenciacollege.edu/students/disputes/>. Once the report is filed, the dean will reach out to schedule an appointment with you to discuss the issues.

Disclaimer

Changes in the syllabus and/or schedule may be made at any time during the semester by announcement of the instructor. A revised syllabus may be issued if necessary. The grading policy and any elements fixed by the college policies, however, will not be changed.

Deadlines

The refund deadline is 11:59 P.M. on **January 16, 2024**.

The withdrawal (W) deadline is 11:59 P.M. on **March 15, 2024**.

Course Schedule

Date	Classroom Session	Laboratory Session
January 8	Introduction to Class	Lab Orientation
January 10	Chapter 11 Liquids	
January 15	No Class or Lab (MLK Day)	No Class or Lab (MLK Day)
January 17	Chapter 11 Liquids	
January 22	Chapter 12 Solutions	Lab 1: Excel Dry Lab
January 24	Chapter 12 Solutions	
January 29	Chapter 12 Solutions	Lab 2: Colligative Properties
January 31	Chapter 13 Rates of Reaction	
February 5	Chapter 13 Rates of Reaction	Kinetics Dry Lab (Handout)
February 7	Chapter 13 Rates of Reaction	
February 12	Exam 1 (Chapters 11, 12, and 13) Chapter 14 Chemical Equilibrium	No Lab Scheduled
February 14	Chapter 14 Chemical Equilibrium	
February 19	Chapter 14 Chemical Equilibrium	Lab 4: Reaction Rates
February 21	Chapter 15 Acids & Bases	
February 26	Chapter 15 Acids & Bases	Lab 5: Equilibrium Constant
February 28	Exam 2 (Chapters 14 and 15) Chapter 16 Acid – Base Equilibria	

Course Schedule (continued)

Date	Classroom Session	Laboratory Session
March 4	Chapter 16 Acid – Base Equilibria	Lab 6: Le Chatelier's Principle
March 6	Chapter 16 Acid – Base Equilibria	
March 11	Chapter 17 Solubility and Complex Ion Equilibria	Lab 7: Acid-Base Equilibrium
March 13	Chapter 17 Solubility and Complex Ion Equilibria	
March 18	No Class or Lab	Spring Break
March 20	No Class or Lab	Spring Break
March 25	Chapter 17 Solubility and Complex Ion Equilibria	Lab 8: Buffers
March 27	Exam 3 (Chapters 16 and 17) Chapter 18 Thermodynamics	
April 1	Chapter 18 Thermodynamics	Lab 9: Solubility Product
April 3	Chapter 18 Thermodynamics	
April 8	Chapter 19 Electrochemistry	Lab 10: Electrochemistry
April 10	Chapter 19 Electrochemistry	
April 15	Chapter 19 Electrochemistry	Thermodynamics Dry Lab (Handout)
April 17	Exam 4 (Chapters 18 and 19)	
April 22	Final Review	No Lab Scheduled
April 24	Final Exam	Comprehensive (all chapters)