CHEMISTRY 1120C
Introduction to Chemistry
Section 502

General Information

Instructor: Tray Niles
Office Hours: Mon & Wed 8:10 to 9:00 AM Art & Science room 102A or by appointment
Email: eniles@unm.edu Phone: 505 925 8600

CLASS Lecture: 9 am - 10:15 am MW In Arts and Science 101 Aug 17, 2026 - Dec 09, 2026
Laboratory: 10:30 -12:30 Monday in Arts and Science 128

Introduction to Chemistry Lecture and Laboratory for Non-Majors

Course Description

This course covers qualitative and quantitative areas of non-organic general chemistry for non-science majors and some health professions. Students will learn and apply principles pertaining, but not limited to, atomic and molecular structure, the periodic table, acids and bases, mass relationships, and solutions. The laboratory component introduces students to techniques for obtaining and analyzing experimental observations pertaining to chemistry using diverse methods and equipment. Three lectures, 3 hours demo lab/recitation. Credit for both this course and CHEM 1215 may not be applied toward a degree program. Credit for both this course and CHEM 1217 may not be applied toward a degree program.

Required Materials

1. OpenStax Textbook: Chemistry Atoms First 2e. Available online: https://openstax.org/details/books/chemistry-atoms-first-2e
2. Access to UNM Canvas
3. Scientific calculator. When selecting a calculator for this class please be sure that the calculator has at least the following functions: EXP, EE or E (exponential function), log, 1/x or x^{-1} (inverse function), x^y or y^x. Please bring your calculator to class regularly. Students will be expected to understand the functioning of their calculator and will be **required to have their own calculator** for tests. There will be NO SHARING of calculators or use of phones for tests or quizzes.

Technical Skills Required:

1. Read and follow directions
2. Complete basic algebraic calculations and use a scientific calculator
3. Perform basic dimensional analysis
4. Use a computer and the Internet
5. Use Canvas, including uploading/downloading documents
6. Read/Write email with attachments

Course Outcomes in Lecture- At the end of this course, students must demonstrate their ability to:

1. Use the different systems of measurements and perform conversion within the same system of measurement and between different systems of measurements.
2. Identify elements from their name and symbol, use the periodic table to describe reactivity patterns of elements and to predict compound formation.

3. Describe the basic structure of an atom using the subatomic particles and apply these concepts to nuclear reactions.
4. Describe ion formation and the difference between covalent and ionic compounds. Name and write formulas for ionic and simple molecular compounds.
5. Write and balance chemical reactions. Use balanced reactions in stoichiometric calculations.
6. Describe the differences between the solid, liquid and gas phases. Use the gas laws in calculations and apply these laws to everyday situations.
7. Explain different types of energy, and how energy is released or absorbed in a reaction.
8. Describe characteristics and behaviors of acids and bases and the nature of buffer solutions.
9. Identify organic compounds, name simple hydrocarbons and functional groups.
10. Predict solubility and solubility trends with temperature and pressure. Perform calculations using, dimensional analysis, percent mass, molarity, dilution and solution stoichiometry.

Student Learning Outcomes in Laboratory

Students will:

1. Practice concepts associated with laboratory safety, including the possible consequences of not adhering to appropriate safety guidelines.
2. Demonstrate the computational skills needed to perform appropriate laboratory related calculations to include, but not be limited to determining the number of significant figures in numerical value, solving problems using values represented in exponential notation, solving dimensional analysis problems, and manipulating mathematical formulas as needed to determine the value of a variable.
3. Perform laboratory observations (both qualitative and quantitative) using sensory experience and appropriate measurement instrumentation (both analog and digital).
4. Record quantitatively measured values to the correct number of significant figures and assign the correct units.
5. Master basic laboratory techniques including, but not limited to weighing samples (liquid and solid), determining sample volumes, measuring the temperature of samples, heating and cooling a sample or reaction mixture, decantation, filtration, and titration.
6. Draw appropriate conclusions based on data and analyses.
7. Present experimental results in laboratory reports of appropriate length, style and depth, or through other modes as required.
8. Determine chemical formulas and classify different types of reactions.
9. Relate laboratory experimental observations, operations, calculations, and findings to theoretical concepts presented in the complementary lecture course.

Course Requirements/Attendance: At UNM students enrolled for credit or audit are expected to attend all class sessions. You will mark the attendance sheet each class. Students who miss 4 class sessions may be dropped from the course by the instructor. Students must keep in mind, however, that it is ultimately their responsibility to withdraw from the course. Absences from class do not relieve students of the responsibility for missed assignments and materials covered in class.

Disruptive Conduct. Disruptive behavior will result in a student being asked to leave a class meeting, which will be recorded as an unexcused absence. Disruptive conduct is behavior that obstructs the teaching or learning process, distracts or intimidates others in a manner that interferes with instructional activities, or fails to adhere to an instructor's appropriate classroom rules or instructions as stated in the syllabus.

Compliance with Safety Agreement in the Laboratory: Students are required to comply with UNM's Safety Policy, including the wearing of safety goggles at all times in the laboratory required by the instructor and limiting unnecessary skin exposure to chemical contact (i. e., no shorts or sandals at any time). All students must view the Safety Video during the first lab period. Any student who is not present for the video during the first laboratory period must make arrangements with their instructor to view the video prior to working in the laboratory. Children and other visitors are not allowed in the laboratory due to possible hazardous conditions. **Failure to comply** with the conditions of the safety agreement may result in a grade of zero for the lab session or the student being dropped from CHEM 1120C.

Dress Code in the Laboratory: All UNM students, faculty and staff are required to be properly clothed at all times while working in or attending chemistry lab classes. Clothing must cover the body from the shoulders to the feet with no exposed skin showing. Approved safety goggles will be worn by all personnel in the lab while chemicals or glassware are in use in the laboratory. High-heeled shoes, sandals and other open-toed footwear are not acceptable for foot protection. Wearing of short shorts, short skirts, short shirts, exposed midriffs, and t-top shirts are not allowed (shirts and tops must cover the torso). Lab coats that extend below the knees can be substituted as appropriate clothing, but they must be buttoned in front. Long hair will be confined. Students wearing inappropriate clothing will be directed to leave the laboratory and obtain safety appropriate attire.

Homework & Problem Sets: Students are responsible for reading the assigned chapters. Homework problems that reflect possible test problems will be handed out at the beginning of each new test section. It is recommended that students attempt all the recommended end-of-chapter problems. The recommended homework problems will not be collected or graded.

Quizzes: The purpose of quizzes is to help you check if you have learned the topics each week. The quizzes/problem sets are indicative of the exam, and their completion is absolutely necessary for success in the class. Additional quizzes are available at the textbook's web site and through various online resources, and students are encouraged to take advantage of these.

Lab Reports: During lab, the student will make observations and collect data. The report sheet will be filled out in class, and calculations and questions will be completed by the following week and handed in at the beginning of the next week's lab session. One lab report revision is offered. No late papers are accepted.

Exams: Three in-class exams will be given. If a student has missed, or will miss an exam, he or she must notify the instructor in a timely manner (before the test is given) to arrange for a make-up. Make-up exams will only be given before the test or, in the time period between the exam date and the return of exams. The lowest exam score will be dropped when calculating the final grade.

Final Exam: In class exam. The final exam covers all material presented during the semester and will be given on the last day of class. If you miss the final exam, you will receive a grade of zero on it. Exceptions will be made on a case-by-case basis. If the final is cancelled by the school (snow day, etc), then final grades will be calculated based on all work assessed up to that point in the course.

The course grade will be determined from the following:

- Homework 10%
- Quizzes (lowest quiz dropped) 15%
- Lab Reports 20%
- Exams (3, lowest exam dropped) 30%
- Final Exam 25%

Grades assigned as follows:

100-98% = A+, 97-93% = A, 92-90% = A- 89-87% = B+, 86-83% = B, 82-80% = B-

79-77% = C+, 76-73% = C, 72-70% = C- 69-67% = D+, 66-63% = D, 62-60% = D-

<60% = F

Accommodations: UNM is committed to providing equitable access to learning opportunities for students with documented disabilities. As your instructor, it is my objective to facilitate an inclusive classroom setting, in which students have full access and opportunity to participate. To engage in a confidential conversation about the process for requesting reasonable accommodations for this class and/or program, please contact Accessibility Resource Center at arcsrvs@unm.edu or 505-277-3506.

UAP 2720 and 2740. Our classroom and university should foster mutual respect, kindness, and support. If you have concerns about discrimination, harassment, or violence, please seek support and report incidents. Find confidential services at LoboRESPECT Advocacy Center, the Women's Resource Center, and the Arcoiris Center. UNM prohibits discrimination on the basis of sex (including gender, sex stereotyping, gender expression, and gender identity). All instructors are "responsible employees" who must communicate reports of sexual harassment, sexual misconduct and sexual violence to Compliance, Ethics and Equal Opportunity. For more information, please see UAP 2720 and UAP 2740.

Credit-hour statement: This is a four-credit-hour course. Class meets for two 75-minute sessions of direct instruction and 2 hours a week for laboratory work for 17 weeks during the Fall 2026 semester. Please plan for a minimum of eight hours of out-of-class work (or homework, study, assignment completion, and class preparation) each week.

Thriving and finding support: Students are especially successful at UNM when they take advantage of support and get involved in campus and academic life. The Student Life tab on the student and instructor MyUNM login page provides direct links to well-being resources, including financial capability, mental health, food, jobs, and resource centers. The Student Life tab on MyUNM will help you identify academic resources like peer tutoring and opportunities like study abroad. You can contact academic advisors and resource advisors for information and guidance via Student Hub on MyUNM. I look forward to providing you with information about academic opportunities related to our class and to helping you find support resources.

Responsible Learning and Academic Honesty: Cheating and plagiarism (academic dishonesty) are often driven by lack of time, desperation, or lack of knowledge about how to identify a source. Communicate with me and ask for help, even at the last minute, rather than risking your academic career by committing academic dishonesty. Academic dishonesty involves claiming that work created by another source is your own original work. It is a Student Code of Conduct violation that can lead to a disciplinary procedure. When you use a resource in work submitted for this class, document how you used it and distinguish clearly between your original work and the material taken from the resource. (Add specifics about acceptable AI usage.)

Chemistry 1120C Class Lecture Schedule 17 week Fall 2026

Week	Dates	Chapter Openstax	Topic
1	8/17 – 8/19	1	Intro to chemistry, Physical and chemical properties, Math, Measurements
2	8/24 – 8/26	2	Math, Atoms, Molecules, and Ions
3	8/31 – 9/02	3	Electronic Structure and Periodic Properties of Elements
4	9/07 – 9/09	4	Exam 1 review & Chemical Bonding
5	9/14 – 9/16	4	**Exam 1 (1-3)** and Chemical Bonding and Molecular Geometry
6	9/21 – 9/23	6	Composition of Substances and Solutions
7	9/28 – 9/30	7	Stoichiometry of Chemical Reactions
8	10/05 – 10/07	7	Stoichiometry
9	10/12 – 10/14	10	Liquids and Solids
10	10/19 – 10/21	10	Intermolecular forces
11	10/26 – 10/28		**Exam 2 (4,6,7,10)** Organic chemistry
12	11/02 – 11/04	21	Organic chemistry
13	11/09 – 11/11	11 &14	Solutions & Acids and bases
14	11/16 – 11/18	8	Gases
15	11/23 – 11/25	8	Gases **Exam 3 (8, 11,14, 21)**
16	11/30 – 12/02	20	Nuclear Chemistry
17	12/07 – 12/09		**Final exam - covers all chapters**

VII. CHEMISTRY 1120C Laboratory Schedule Fall 2026

Week	Dates	CHEM 1215L Experiments
1	8/17 – 8/19	*Laboratory Safety and CHEM 1215L Math Review*
2	8/24 – 8/26	*Safety, Laboratory Equipment and Essential Math.*
3	8/31 – 9/02	*Density of Liquids and Solids.*
4	9/07 – 9/09	*Paper Chromatography.*
5	9/14 – 9/16	*Determining Percent Composition of Compounds.*
6	9/21 – 9/23	*Determining Percent Composition of Compounds.*
7	9/28 – 9/30	*Percent Yield of Chemical Reactions.*
8	10/05 – 10/07	*Determining Concentration of Acetic Acid in Vinegar.*
9	10/12 – 10/14	*Determining Concentration of Acetic Acid in Vinegar.*
10	10/19 – 10/21	*Using Gas Evolution for Mass Percent Analysis of Antacid.*
11	10/26 – 10/28	*Using Gas Evolution for Mass Percent Analysis of Antacid.*
12	11/02 – 11/04	*Using Calorimetry for Determining Heat of Reaction.*
13	11/09 – 11/11	*Using Calorimetry for Determining Heat of Reaction.*
14	11/16 – 11/18	*Emission Spectra.*
15	11/23 – 11/25	*Lewis Structures and Molecular Geometry.* *11/26 & 11/27 Thanksgiving Holiday*
16	11/30 – 12/02	*Final Review*
17	12/07 – 12/09	*Final Exam*