

## Spring 2026 Course Syllabus: CHEM 1120C-502

### **Introduction to Chemistry Lecture and Laboratory for Non-Majors**

Instructor: Dr. Alan Thomas

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Office Hours: Wednesday, 11:00 AM until noon

Office: VAAS 113, #119 (cubicle zone, third on the left)

Mon. & Wed Lecture: 9:00 AM – 10:15 AM

VAAS Room A101

Monday Lab: 10:30 – 12:30 AM

VAAS Room A128

### **General Information:**

#### 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 course meets twice a week, Mondays and Wednesdays, for 1 hour and 15 minutes. There is a single recitation/laboratory session each week following class on Mondays which lasts for 2 hours.

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.

Course Prerequisites: ACT  $\geq$  22

or SAT score  $\geq$  510

or MATH 103, 121, 150, 162, 163, 180, 181, or 264.

Course Materials: Electronic textbook

The textbook that will be utilized for homework assignments is: *Introductory Chemistry - 1st Canadian Edition*, by David W. Ball and Jessie A. Key. This textbook is available for free and may be downloaded from the Canvas page for the course on the UNM website or at:

<https://opentextbc.ca/introductorychemistry/>

There is no required textbook for the lecture. There are many fine, open-source, verified chemistry textbooks available for students online. The students are welcome and encouraged to use whatever resources they are able to find to assist them in their discovery of chemistry. It is of the utmost importance that students attend lecture intent on taking notes. Class notes are essential for studying, doing homework, and reviewing for exams.

### **Access to UNM Canvas and UNM email**

Important class announcements and official communications will occur via UNM email. Some class material will be posted on UNM Canvas. Valencia Campus provides free internet and computer access for all students at the library, STEM center, Building B (VABT), and the Learning Resource Center. Please check your email frequently.

## Other items required for this class

- Each student will need a non-programmable scientific calculator with logarithmic and exponential functions. Examples are the Texas Instruments (TI) 30Xa, 30X IIS, and 30XS. Casio or Sharp equivalents are acceptable, mobile telephones, graphing calculators, electronic tablets, notebooks, or laptop computers are not.
- A notebook, for notes. Course lecture presentations slides will not be posted online. The importance of taking notes and paying attention will be covered in class.
- A binder to organize printed material (handouts) from the lecture and laboratory class sessions.

## Recitation/Laboratory Sessions

Students are not required to purchase any special equipment or supplies for this portion of the class. Students will be introduced to a laboratory environment, personal protective equipment, laboratory equipment, and analytical instrumentation. Laboratory rules of conduct and safety seminars will be given. Laboratory sessions will involve demonstrations of chemical processes to highlight the material covered in the class. These demonstrations are intended to reinforce classroom concepts. Students will not perform the demonstrations, but may be quizzed about the demonstration and what concepts it is reinforcing.

Recitation sessions will be used to allow students to work collectively and individually on their lecture assignments, and additional laboratory exercises, under the instructor's supervision. It is essential that all students have adequate practice solving the necessary mathematical equations relevant to the material covered in class.

## Class Policies:

### Attendance:

**Attendance is mandatory.** Every student is expected to attend every scheduled class and laboratory session. Absences due to illness or other emergencies must be documented after the fact or approved in advance. If circumstances allow, please email me as soon as possible and make arrangements to complete any work or readings which are necessary. Every student is responsible for completing all assignments and exams regardless of any absences. *Every excused absence must be communicated. All exams must be attended without prior exemption.*

Any student with excessive absences may be involuntarily withdrawn (dropped) from the course at the discretion of the instructor or they may receive a failing grade at the end of the semester. In addition, students will be involuntarily withdrawn by the instructor (dropped) from the course without notification for any of the following reasons:

- A. They have missed the first two lectures and the first laboratory session.
- B. They have not completed any homework assignments by the end of the second week of class.
- C. They have accumulated two consecutive unexcused absences.
- D. They have accumulated a total of three absences.

**Students are expected to be on time.** Lecture and laboratory classes will begin promptly at the scheduled time. Any student who arrives more than 10 minutes late to any class session will be counted absent (it is highly recommended that you remain in class or lab anyway). Late arrival or early departure from class is disruptive and unacceptable.

Grading:

<b>Homework:</b>	<b>30%</b>
<b>Laboratory exercises</b>	<b>10%</b>
<b>Periodic Exams (3)</b>	<b>30%</b>
<b>Final Exam</b>	<b>30%</b>

\*\* The Final Exam is mandatory. Any student who does not take the final exam will automatically fail the class\*\*

**Course Grading Scale**

<b>100 – 96</b>	<b>A +</b>	<b>89 – 87</b>	<b>B +</b>	<b>79 – 77</b>	<b>C+</b>	<b>59 – 0</b>	<b>F</b>
<b>95 – 93</b>	<b>A</b>	<b>86 – 84</b>	<b>B</b>	<b>76 – 70</b>	<b>C</b>		
<b>93 – 90</b>	<b>A –</b>	<b>84 – 80</b>	<b>B –</b>	<b>69 – 60</b>	<b>D</b>		

Electronic devices:

Your textbook is electronic, and if you want to have access to the book during lecture you are encouraged to bring a mobile electronic device which can display your textbook to class. However, *the use of any electronic device for purposes other than displaying your textbook are forbidden.* **You are not allowed to record audio or video of any classroom or laboratory session without express prior written consent of all persons present.** Any student who violates this policy is subject to involuntary withdrawal from the course. They will be held liable for any civil or criminal charges brought against them for this behavior.

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](mailto:arcsrvs@unm.edu) or 505-277-3506.

Academic Honesty:

Every student is expected to maintain the highest standards of honesty and integrity in all academic and professional affairs. The University reserves the right to take disciplinary action, including dismissal, against any student who is found to be responsible for academic dishonesty. Academic dishonesty includes but is not limited to: dishonesty in quizzes, tests or assignments, claiming credit for work not performed or performed by others, hindering or interfering with the academic work of others, and misrepresentation of academic or professional qualifications within or outside the University. Depending on the severity of the offense,

students who commit academic dishonesty may receive a zero on an assignment, be involuntarily withdrawn from a course, or receive a failing grade in the course at the end of the semester.

### Sexual Misconduct and Gender Discrimination:

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 LGBTQ Resource 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.

### **Student Learning Outcomes:**

Every student should be able to demonstrate all the following knowledge and skills at the termination of this course:

1. An understanding of metrology and the ability to express measurable quantities in SI (Système International d'unités) units, perform unit conversion between SI and other units, and perform quantitative calculations.
2. An understanding of the structure and composition of the atom in terms of subatomic particles. Knowledge concerning how atomic structure and composition has been determined by experimentation. The ability to diagram the structure of different atoms.
3. Knowledge of the IUPAC (International Union of Pure and Applied Chemistry) system of chemical nomenclature and types of chemical reactions. The ability to use IUPAC nomenclature to describe elemental and chemical states, express chemical reactions as balanced equations, and predict reaction products and state.
4. Knowledge of the constant of proportionality of all matter, the "mole". The ability to use the mole at the micro and macroscopic scale to perform chemical reaction stoichiometry.
5. Knowledge of gas laws and kinetic molecular theory. Use of this knowledge to relate atomic scale properties to macroscale properties.
6. An understanding of atomic electronic orbitals and the principals of electronic bonding between atoms. Utilization of atomic electronic orbital theory to predict and describe molecular electronic orbitals and orbital hybridization. Utilization of atomic electronic orbital theory to describe elemental periodic properties (electronegativity, oxidation state, etc.) and reactivity.

7. Knowledge of the different types of intermolecular forces. The ability to predict a molecule's physical properties based on intermolecular forces from its structure and composition.
8. Knowledge of the fundamentals of solubility and solution state reactions. The ability to express solute concentrations in appropriate units and explain the effects of temperature, pressure, and molecular structure on solubility.
9. The ability to express chemical reactions in terms of rate (time dependency). The ability to calculate product and reactant concentrations as a function of reaction time. The ability to determine reaction rate, rate law, and rate constant from experimental data.
10. Apply the collision model to chemical reactions including a reaction's activation energy and the effects of temperature or the presence of a catalyst on a reaction.
11. The ability to identify oxidizing and reducing molecules and chemical reactions.
12. Knowledge concerning which environmental factors influence chemical equilibrium and an understanding of how this effects reaction rates. Knowledge of Le Chatelier's Principal and the ability to use it to predict effects on chemical equilibrium from changing reaction conditions (pressure, concentration, etc.) The ability to calculate equilibrium constants from equilibrium concentrations and vice versa. The ability to calculate an equilibrium constant and use it to determine if equilibrium has occurred in a reaction.
13. Knowledge of the different models for acids and bases and the ability to recognize commonly occurring acids and bases using molecular structure and composition.
14. The ability to calculate pH and solution concentration using equilibrium principals.
15. Knowledge of temporally unstable (radioactive) atoms and their decay modes. The ability to compare penetration and ionization power of different types of radiation, balance nuclear decay reaction equations, calculate half-life of radioactive isotopes.