

Class Meetings

Lecture: Monday & Wednesday 9:00 am – 10:15 am US MT, VAAS 140

Modality: 100% face-to-face.

Instructor Contact Information:

Office: VAHS 100A

Phone: 505.925.8611

Drop-in Hours (all times US MT)**:**
Mondays: 10:30 am – 12:00 pm
Thursdays: 10:30 am – 12:00 pm
And other times by appointment

Email: Canvas messaging for class-related questions, jgodbout@unm.edu for other inquiries

COURSE DESCRIPTION #1: The study of stuff, and what it does (2nd of a 2-course sequence)

COURSE DESCRIPTION #2: 3 Credits. This course is intended to serve as a continuation of general chemistry principles for students enrolled in science, engineering, and certain preprofessional programs. The course includes but is not limited to a theoretical and quantitative coverage of solutions and their properties, kinetics, chemical equilibrium, acids and bases, entropy and free energy, electrochemistry, and nuclear chemistry. Additional topics may include (as time permits) organic, polymer, atmospheric, and biochemistry.

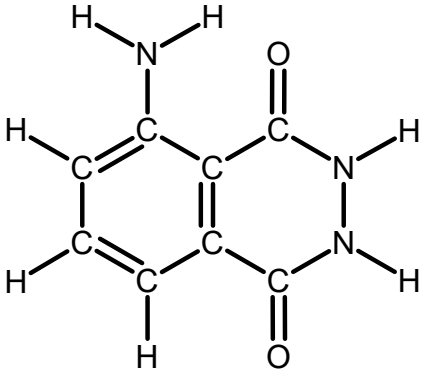
Credit for both this course and CHEM 1227 may not be applied toward a degree program.

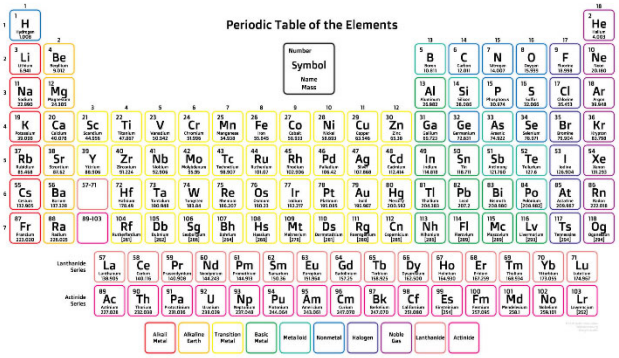
Meets New Mexico General Education Curriculum Area 3: Physical and Natural Sciences.

Prerequisite: (CHEM 1215 or 1217) and 1215L) or ALEKS2 =>50%.

Pre- or corequisite: 1225L.

Now guess which one is the instructor's, and guess which one is has gone through various committees and perhaps a lawyer or two

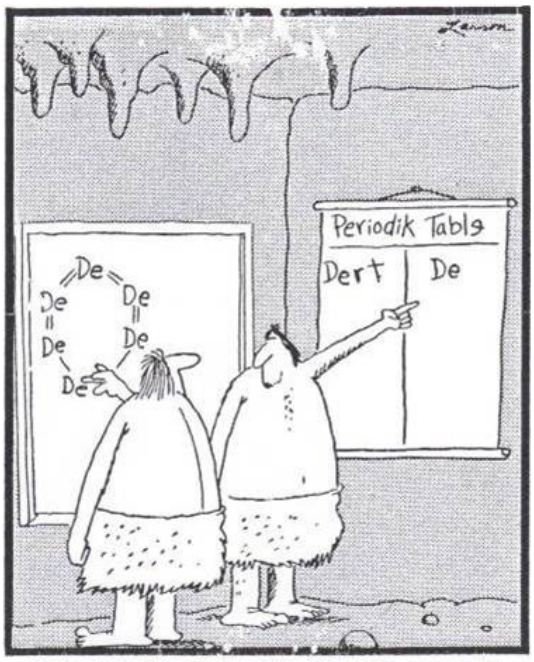




WHAT YOU'LL LEARN

Course-Level Student Learning Outcomes

1. Explain the intermolecular attractive forces that determine physical properties and phase transitions and apply this knowledge to qualitatively evaluate these forces from structure and to predict the physical properties that result.
2. Calculate solution concentrations in various units, explain the effects of temperature, pressure and structure on solubility, and describe the colligative properties of solutions, and determine solution concentrations using colligative property values and vice versa.
3. Explain rates of reaction, rate laws, and half-life, determine the rate, rate law and rate constant of a reaction and calculate concentration as a function of time and vice versa, as well as explain the collision model of reaction dynamics and derive a rate law from a reaction mechanism, evaluating the consistency of a mechanism of a given rate law.



Early chemists describe the first dirt molecule
Larson, Gary, *The Far Side*

4. Describe the dynamic nature of chemical equilibrium and its relation to reaction rates and apply Le Chatelier's Principle to predict the effect of concentration, pressure and temperature changes on equilibrium mixtures as well as describe the equilibrium constant and use it to determine whether equilibrium has been established, and calculate equilibrium constants from equilibrium concentrations and vice versa.
5. Describe the different models of acids and base behavior and the molecular basis for acid strength, as well as apply equilibrium principles to aqueous solutions, including acid base and solubility reactions, and calculate pH and species concentrations in buffered and unbuffered solutions.
6. Explain titration curves and speciation diagrams, as well as calculate concentrations of reactants from the former and determine dominant species as a function of pH from the latter.
7. Explain and calculate the thermodynamic functions, enthalpy, entropy and Gibbs free energy, for a chemical system, and relate these functions to equilibrium constants and reaction spontaneity; balance redox equations, express them as two half reactions and evaluate the potential, free energy and equilibrium *K* for the reaction, as well as predict the spontaneous direction.
8. Construct a model of a galvanic or electrolytic cell; or describe organic reactions.
9. Describe bonding theories, such as valence and molecular orbital theory.

What You'll Need (Required Resources)

- **Text:** Atoms First from OpenStax, Print ISBN 1-947172-64-6, Digital ISBN 1-947172-63-8, https://openstax.org/details/books/chemistry-atoms-first-2e or go to the following web address or scan the QR code on the below. This textbook is available for free online, in web view and downloadable PDF. You can also get a print version at a very low cost from OpenStax on Amazon.com. You can use whichever formats you like. Web view is recommended - the responsive design works well on any device. If you buy on Amazon, make sure you use the link on your book page on openstax.org so you get the official OpenStax print version. The print quality will be high, and it supports the authors. The text is also available in Spanish.

Course Text

- Calculator with scientific notation, log/anti-log and exponential functions.
- Internet Access: *Canvas* and *UNM email address* ***must be checked regularly (daily)!***

What You'll Find Useful (Recommended Resources)

- Binder for lecture notes, handouts, group activities
- Mastering Chemistry notebook (or place in binder to keep track of problem solving, identify patterns, record areas of difficulty
- Periodic table (on paper): Download your favorite from the internet! Having a paper copy available while you are working will be very useful
- Small markerboard to share your work with classmates

What Will Each Class Be Like?

- **Course Business**
- **Questions from previous meetings:** questions from previous meeting's reflections answered
- **Brief concept introduction:** A quick (> 15 minutes) intro of the concepts for the day
- **Group Activity:** collaborative activities to help master that day's topic
- **Report Results:** group results will be discussed as a class
- **Reflection:** an opportunity to put the day's lesson into larger perspective, and formulate/ask questions

Course/Instructor Communications

- Please use the messaging feature in UNM Canvas for course correspondence. UNM email (Lobo Mail) should be used only when there are issues with Canvas messaging.
- When requesting meeting, please propose three (3) times that work for you in your initial request, and I'll choose from those if possible. This makes scheduling much more efficient
- It is the responsibility of the student to keep up with course announcements. ***Check Canvas and your UNM email and daily!***

What Will Your Routine Be Like?

- **Before Class**: Complete any preparatory assignment (reading, video, etc.)
- **During Class:** Work with your group to master concepts. The more effort you put into this, the more you'll get out of it.
- **After Class:** work on homework assignment relevant to that day's topic (review notes, **WORK ON PROBLEMS**, think of questions for drop-in hour visits, **WORK ON PROBLEMS,** etc.
- **Repeat 29 times!**

How Is My Grade Determined?

(Exams, Quizzes, Homework, and the Like)

	How Many	Weight
Class Points	1	10 %
Homework	10*	25 %
Exams	4**	50 %
Final Exam	1	15 %
Total		**100 %**

* Approximate values

** Each equally weighted, 12.5 % each

Classroom/Attendance Policy

Be there. Students are expected to attend all meetings. That being said, I fully understand that life happens. Absences due to illness, family emergencies, and the like will be excused, but must be discussed with the instructor, beforehand when possible. Students will also be responsible for making up any missed assignments, but I'll happily work with you with deadlines. And be careful – while the videos provided on Canvas represent all the course material, they should **not** be used as a substitute for coming to class. Students accumulating three or more **unexcused** absences may result in being dropped from the class. I will also exercise my discretion to without notice drop any student who misses the first two meetings or has not completed any activities in Canvas by the end of the 2nd week of the semester.

Be on time. Class will begin promptly. If you must arrive late, please do so in the least disruptive manner possible

Keep at it: Homework will be assigned regularly through Canvas. Questions on these assignments will prepare you for exam questions. You will generally have multiple attempts for each assignment.

What Do I Need For an A?

(What's the grading scale?)

Earn This %	Get This Grade
98	A+
92	A
90	A-
88	B+
83	B
80	B-
78	C+
73	C
69	C-
67	D+
62	D
60	D-
55	F+
0	F

Extra Credit

So that molecule on the front page – send me a message with its name for ten extra chapter assignments points. Offer expires after exam 1 is distributed. Hint – This molecule is found in many CSI kits.

What If You Need Help? (UNM-Valencia Resources)

Instructor: Use my drop-in hours in my office and the Learning Commons, and Canvas course messaging to talk to me about anything.

Learning Commons: Stop in for tutors*, laptops, calculators, or just to decompress and have a snack.

* Reminder: while our tutors are awesome, it is **your** responsibility to make sure they understand well enough to complete the problems on **your own**.

Selected Dates, Deadlines & Holidays[1]	
Fri, 28 Aug 2026	Last day to register, ADD sections and change credit hours on LoboWEB Enrollment cancellation for non-payment on LoboWEB
Fri, 04 Sep 2026	Last Day to DROP without "W" grade and 100% tuition refund on LoboWEB
Mon, 07 Sep 2026	University Holiday – Labor Day
Thu, 08 Oct 2026	University Holiday – Fall Break (through Fri, 09 Oct, 2026)
Fri, 06 Nov 2026	Last Day to DROP via LoboWEB
Thu, 26 Nov 2026	University Holiday – Thanksgiving (through Sun, 29 Nov 2026)
Fri, 04 Dec 2026	Last day to withdraw and change grading options

WHEN WILL WE LEARN THIS STUFF?
(Schedule is approximate and subject to change by the instructor)

Meeting	Date	Topics/Events
1	Mon 17 Aug	Syllabus, Review: Lewis Structures, VSEPR, Polarity (4.2 – 4.6)
2	Wed 19 Aug	Intermolecular Forces, Phase Changes, Relative BP (10.1 – 10.6)
3	Mon 24 Aug	Solutions and Solubility (11.1 – 11.3)
4	Wed 26 Aug	Colligative Properties (11.4)
5	Mon 31 Aug	Kinetics: Introduction (17.1 – 17.3, 17.5)
6	Wed 02 Sep	Exam 1: CHEM 1215 Review, Chapters 10, 11
7	Mon 07 Sep	**Labor Day – No Meeting**
8	Wed 09 Sep	Kinetics: Integrated Rate Laws (17.4)
9	Mon 14 Sep	Kinetics: Temp Dependence and Mechanisms (17.5 – 17.7)
10	Wed 16 Sep	Kinetics: Review
11	Mon 21 Sep	Equilibrium: Intro (13.1 – 13.2)
12	Wed 23 Sep	Equilibrium: ICE Tables (13.4)
13	Mon 28 Oct	Equilibrium: Q and LeChâtelier's Principle (13.3)
14	Wed 30 Oct	Equilibrium: Review
15	**Mon 05 Oct**	**Exam 2: Kinetics and Equilibrium (Chapters 17, 13)**
16	Wed 07 Oct	Acids/Bases: Definitions, K_a, K_w, pH scale (14.1 -14.3)
17	Mon 12 Oct	Acids/Bases: Weak acid/base equilibria (14.3)
18	Wed 14 Oct	Acids/Bases: Weak acid/base equilibria (cont) (14.3)
19	Mon 19 Oct	Acids/Bases: Salts, Polyprotic Acids, Lewis Definition (14.4 – 14.5, 15.2)
20	Wed 21 Oct	Equilibrium: Buffers (14.6) – Happy Mole Day!
21	Mon 26 Oct	Equilibrium: Weak A/B titrations (14.7)
22	Wed 28 Oct	Equilibrium: Solubility (15.1)
23	**Mon 02 Nov**	**Exam 3: A/B Equilibria, Solubility (Chapters 14, 15)**
24	Wed 04 Nov	Thermodynamics: Entropy (12.1 -12.3)
25	Mon 09 Nov	Thermodynamics: Gibbs Free Energy (12.4)
26	Wed 11 Nov	Thermodynamics: GFE and Equilibrium (13.4)
27	Mon 16 Nov	Electrochemistry: Intro and Balancing (16.1)
28	Wed 18 Nov	Electrochemistry: Galvanic and Electrolytic Cells (16.2 – 16.4, 16.7)
29	Mon 23 Nov	Electrochemistry: Batteries and Corrosion (16.5 – 16.6)
30	Wed 25 Nov	Thermodynamics and Electrochemistry Review/Catch Up
31	**Mon 30 Nov**	**Exam 4: Thermodynamics and E-Chem (Chapters 12, 16)**
32	Wed 02 Dec	Review of CHEM 1225 Topics and Learning Objectives
	Mon 07 Dec	**Final Exam (9:00 – 11:00 a.m.)**

[1] These are only selected deadlines! For a complete and up-to-date calendar, please see https://registrar.unm.edu/semester-deadline-dates/index.html

Credit-hour Statement

This is a three-credit-hour course. Class meets for two 75-minute sessions of direct instruction per week for sixteen weeks during the Fall 2026 semester. Please plan for a minimum of six hours of out-of-class work (or homework, study, assignment completion, and class preparation) each week.

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 presenting material as your own that has been generated on a website, in a publication, by an artificial intelligence algorithm (AI), by another person, or by otherwise breaking the rules of an assignment or exam. Academic dishonesty is a violation of the Student Code of Conduct that can lead to a disciplinary procedure.

Student Code of Conduct

Having academic integrity is paramount to your success in any class. Plagiarism or cheating is not tolerated. For more information, please consult the UNM Academic Integrity Policy

The policy states in part: *Each student is expected "to maintain the highest standards of honesty and integrity in academic and professional matters. The University reserves the right to take disciplinary action, up to and including dismissal, against any student who is found guilty of academic dishonesty or who otherwise fails to meet the expected standards. Any student judged to have engaged in academic dishonesty in course work may receive a reduced or failing grade for the work in question and/or for the course.*

Academic Integrity Policy

Academic Dishonesty is defined as: "Academic dishonesty" includes, but is not limited to, dishonesty in quizzes, tests, or assignments; claiming credit for work not done or done by others; hindering the academic work of other students; misrepresenting academic or professional qualifications within or without the University; and nondisclosure or misrepresentation in filling out applications or other University records.

Generative AI Statement

This course is meant to help you develop and demonstrate key knowledge and skills without the support of generative artificial intelligence (AI) tools for submitted work. Using generative AI to complete submitted coursework in this course will interfere with the advantages in learning and understanding that this course offers you. You are expected to complete submitted work without any generative AI assistance. Prohibited generative AI use includes tools such as ChatGPT, Claude, Gemini, Copilot, Grammarly's generative AI features, AI image generators, AI video or audio generators, AI code generators, AI paraphrasing tools, AI presentation generators, AI design tools, and similar technologies. The purpose of this course policy is educational, not punitive. The assignments in this course are aligned with specific learning processes and outcomes that support your future learning and expertise. Submitting AI-generated or AI-assisted in this course is inconsistent with course expectations and may violate UNM's academic integrity standards and Student Code of Conduct. If AI use is suspected, I will use submitted coursework, assignment directions, conversations with you about your work and process, and this syllabus to determine whether academic misconduct occurred. If you are unsure if a tool or use is allowed, please ask before submitting the assignment.

Wellness

If you do need to stay home due to illness or are experiencing a wellness challenge, please take advantage of the resources below. You can communicate with me via Canvas messaging or jgodbout@unm.edu, and I will work with you to provide alternatives for course participation and completion. Let me, an advisor, or another UNM staff member know that you need support so that we can connect you to the right resources. UNM is a mask friendly, but not a mask required, community. If you are experiencing COVID-19 or any other infectious symptoms, please do not come to class.

Support

PASOS Resource Center (505) 925-8546, mailto:pasos@unm.edu. The Resource Center is an on-campus center that serves as a "one-stop" for all non-academic needs of UNM-Valencia students.

Student Health and Counseling (SHAC) at (505) 277-3136.

TimelyCare: Free 24/7 virtual care services (medical, emotional support, health coaching, self-care, basic needs support).

LoboRESPECT Advocacy Center (505) 277-2911 can offer help with contacting faculty and managing challenges that impact your UNM experience.

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 The UNM-Valencia Equal Access Services (Sarah Clawson, Coordinator), at (505) 925-8840 or by email at msjclawson@unm.edu. Or the UNM-Albuquerque Accessibility Resource Center at arcsrvs@unm.edu or by phone at 505-277-3506.

Equal Access Services

Support

UNM Valencia Learning Commons (tutoring). Tutoring is available to you in math, science, writing, and other subjects through the Learning Commons: Learning and STEM Centers and Writing Center. In person tutoring is in these centers in the LRC (the building that also has the library). Tutoring in Zoom and, for writing, through email, is also available.

Learning Commons Booking

Making use of tutoring is a fantastic way to use your resources and set yourself up to learn deeply and well in your courses. To schedule an appointment, please go to: Learning Commons Bookings

If you are making an email appointment with the Writing Center, email your draft to tutor@unm.edu after you fill out the form above.

If you have difficulty with the scheduling link above, would like an appointment in a subject not listed at that link, or have a question, email tutor@unm.edu. You'll get answers during business hours Monday through Friday.

The webpage, with more details about available hours, is here: Learning Commons: Tutoring Services webpage.

Center for Academic Program Support (CAPS). Many students have found that time management workshops can help them meet their goals (consult (CAPS) website under "services").



Title IX

Title IX Policy

The University of New Mexico and its faculty are committed to supporting our students and providing an environment that is free of bias, discrimination, and harass-ment. The University's programs and activities, including the classroom, should always provide a space of mutual respect, kindness, and support without fear of harassment, violence, or discrimination. Discrimination on the basis of sex includes discrimination on the basis of assigned sex at birth, sex characteristics, pregnancy and pregnancy related conditions, sexual orientation and gender identity. If you have encountered any form of discrimination on the basis of sex, including sexual harassment, sexual assault, stalking, domestic or dating violence, we encourage you to report this to the University. You can access the confidential resources available on campus at the LoboRESPECT Advocacy Center (https://loborespect.unm.edu), the Women's Resource Center (https://women.unm.edu), and the LGBTQ Resource Center (https://lgbtqrc.unm.edu). **If you speak with an instructor (including a TA or a GA) regarding an incident connected to discrimination on the basis of sex, they must notify UNM's Title IX Coordinator that you shared an experience relating to Title IX, even if you ask the instructor not to disclose it.** The Title IX Coordinator is available to assist you in understanding your options and in connecting you with all possible resources on and off campus. For more information on the campus policy regarding sexual misconduct and reporting, please see https://policy.unm.edu/university-policies/2000/2740.html and CEEO's website.

If you are pregnant or experiencing a pregnancy-related condition, you may contact UNM's Office of Compliance, Ethics, and Equal Opportunity at ceeo@unm.edu. The CEEO staff will provide you with access to available resources and supportive measures and assist you in understanding your rights.For more information on the campus policy regarding sexual misconduct, please see: https://policy.unm.edu/university-policies/2000/2740.html.

Support

Confidential services for students are available at LoboRESPECT Advocacy Center and the support services listed on its website, the Women's Resource Center and the LGBTQ Resource Center all offer confidential services and reporting. The Women's Resource Center supports all students, including those who are pregnant or are parents. UNM-Valencia has lactation stations located in LRC 112 (Tomé campus) and in the Workforce Training Center.

Land Acknowledgement

Founded in 1889, the University of New Mexico sits on the traditional homelands of the Pueblo of Sandia. The original peoples of New Mexico Pueblo, Navajo, and Apache since time immemorial, have deep connections to the land and have made significant contributions to the broader community statewide. We honor the land itself and those who remain stewards of this land throughout the generations and also acknowledge our committed relationship to Indigenous peoples. We gratefully recognize our history.

Resource: Division for Equity and Inclusion.



Citizenship and/or Immigration Status

All students are welcome in this class regardless of citizenship, residency, or immigration status. Your professor will respect your privacy if you choose to disclose your status. UNM as an institution has made a core commitment to the success of all our students, including members of our undocumented community. The Administration's welcome is found on our website:: http://undocumented.unm.edu/.



Citizenship/Immigration status

Respectful Conduct Expectations

I am committed to building with you a positive classroom environment in which everyone can learn. I reserve the right to intervene and enforce standards of respectful behavior when classroom conduct is inconsistent with University expectations [and/or classroom community agreements]. Interventions and enforcement may include but are not limited to required meetings to discuss classroom expectations, written notification of expectations, and/or removal from a class meeting. Removal from a class meeting will result in an unexcused absence. [Insert number] or more unexcused absences may result in permanent removal and a drop from the course (see attendance policy). The University of New Mexico ensures freedom of academic inquiry, free expression and open debate, and a respectful campus through adherence to the following policies: D75: Classroom Conduct, Student Code of Conduct, University Policy 2240 – Respectful Campus, University Policy 2210 – Campus Violence.

Thriving and Finding Support

Many students have found that time management workshops or work with peer tutors can help them meet their goals. These and other resources are available through PASOS (Pathways to Articulation and Sustainable Opportunities for Students), TRIO Student Support Services, and Student Learning Support at the Center for Teaching and Learning. Center for Academic Program Support (CAPS). Many students have found that time management workshops can help them meet their goals (consult (CAPS) website under "services").

Connecting to Campus and Finding Support

UNM-Valencia has many resources and centers to help you thrive, including opportunities to get involved, mental health resources, academic support including tutoring, resource centers, free food at Valencia Campus Food Pantry, and jobs on campus, and financial capability support. Your advisor, staff at the resource centers and Academic Affairs Office, and I can help you find the right opportunities for you.