

# Dr. Jerry Godbout

## CHEM-1225 General Chemistry II for STEM Majors

Fall 2023 – Section 501 – CRN 64810

### Class Meetings

Wednesday 10:30 am – 1:15 pm US MT, VAAS 128

Modality: 100% face-to-face. We hope.

### Instructor Contact Information:

Office: VAAS 102A

Phone: 505.925.8611

**Drop-in Hours** (all times US MT): **These will be posted during the first week of class. Appointments (either in-person or remote) can also be made at times mutually convenient to the student and instructor**

**Canvas Messaging (Inbox)** preferred for course matters, for other issues:

**Email:** [jgodbout@unm.edu](mailto:jgodbout@unm.edu)



**COURSE DESCRIPTION:** General Chemistry II Laboratory for Science Majors is the second of a two semester sequence of laboratory courses designed to complement the theory and concepts presented in General Chemistry II lecture. The laboratory component will introduce students to techniques for obtaining and analyzing experimental observations pertaining to chemistry using diverse methods and equipment.

Periodic Table of the Elements

1																	18												
1																	2												
3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18														
H Hydrogen 1.008	He Helium 4.003															Ne Neon 20.180													
3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18														
Li Lithium 6.941	Be Beryllium 9.012	B Boron 10.811	C Carbon 12.011	N Nitrogen 14.007	O Oxygen 15.999	F Fluorine 18.998	Ne Neon 20.180	Na Sodium 22.990	Mg Magnesium 24.305	Al Aluminum 26.982	Si Silicon 28.086	P Phosphorus 30.974	S Sulfur 32.06	Cl Chlorine 35.45	Ar Argon 39.948														
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36												
K Potassium 39.098	Ca Calcium 40.078	Sc Scandium 44.956	Ti Titanium 47.88	V Vanadium 50.942	Cr Chromium 51.996	Mn Manganese 54.938	Fe Iron 55.845	Co Cobalt 58.933	Ni Nickel 58.69	Cu Copper 63.546	Zn Zinc 65.38	Ga Gallium 69.723	Ge Germanium 72.63	As Arsenic 74.922	Se Selenium 78.96	Br Bromine 79.904	Kr Krypton 83.798												
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54												
Rb Rubidium 85.468	Sr Strontium 87.62	Y Yttrium 88.906	Zr Zirconium 91.224	Nb Niobium 92.906	Mo Molybdenum 95.94	Tc Technetium 98.906	Ru Ruthenium 101.07	Rh Rhodium 102.906	Pd Palladium 106.42	Ag Silver 107.868	Cd Cadmium 112.415	In Indium 114.818	Sn Tin 118.710	Sb Antimony 121.757	Te Tellurium 127.6	I Iodine 126.905	Xe Xenon 131.29												
55	56	57-71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86												
Cs Cesium 132.905	Ba Barium 137.327	Lanthanides					Hf Hafnium 178.49	Ta Tantalum 180.948	W Tungsten 183.84	Re Rhenium 186.207	Os Osmium 190.23	Ir Iridium 192.222	Pt Platinum 195.084	Au Gold 196.967	Hg Mercury 200.59	Tl Thallium 204.384	Pb Lead 207.2	Bi Bismuth 208.980	Po Polonium 209	At Astatine 210	Rn Radon 222								
87	88	89-103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118												
Fr Francium 223	Ra Radium 226	Actinides					Rf Rutherfordium 261	Db Dubnium 262	Sg Seaborgium 263	Bh Bohrium 264	Hs Hassium 265	Mt Meitnerium 266	Ds Darmstadtium 267	Rg Roentgenium 268	Cn Copernicium 269	Uut Ununtrium 270	Fl Flerovium 277	Uup Ununpentium 278	Lv Livermorium 286	Uus Ununseptium 287	Uuo Ununoctium 288								
89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106												
La Lanthanum 138.905	Ce Cerium 140.12	Pr Praseodymium 140.908	Nd Neodymium 144.24	Pm Promethium 144.913	Sm Samarium 150.36	Eu Europium 151.964	Gd Gadolinium 157.25	Tb Terbium 158.925	Dy Dysprosium 162.50	Ho Holmium 164.930	Er Erbium 167.259	Tm Thulium 168.934	Yb Ytterbium 173.054	Lu Lutetium 174.967	Ac Actinium 227.033	Th Thorium 232.038	Pa Protactinium 231.036	U Uranium 238.029	Np Neptunium 237.048	Pu Plutonium 244.064	Am Americium 243.061	Cm Curium 247.070	Bk Berkelium 247.070	Cf Californium 251.080	Es Einsteinium 252.083	Fm Fermium 257.095	Md Mendelevium 258.10	No Nobelium 259.10	Lr Lawrencium 262



### COURSE/INSTRUCTOR COMMUNICATIONS

- Email is the most effective. Electronic communication for this course **MUST** be through your UNM email.
- When requesting an appointment (which I am always happy to schedule), please propose three (3) times that work for you in your initial request. This will simplify and quicken the process
- It is the responsibility of the student to keep up with course announcements. **Check your UNM email and Canvas daily!**

### WHAT YOU'LL NEED (Required Resources)

- Chemistry: A Molecular Approach (2<sup>nd</sup> to 5<sup>th</sup> ed)
- Safety goggles, lab coat, lab notebook (CHEM 1215L notebook may be used)
- Calculator (non-graphing) with log/antilog and exponential functions
- Internet Access: *Canvas* and *UNM email address must be checked daily!*

### WHAT IF YOU NEED HELP? (UNM-Valencia Resources)

- **Instructor:** Office hours, STEM Center Hours, email
- **STEM Center:** Tutors\*, molecular modelling kits, Laptops, textbooks

\*When using tutors, it is the **students'** responsibility to make sure they understand well enough to complete the problems on **their own**.

### HOW IS YOUR GRADE DETERMINED?

(Exams, Quizzes, Homework, and the Like)

	How Many	Points
Experiments & Activities	8	240
Project Proposal	1	40
Project Poster	1	80
Project Presentations	1	80
Final Exam	1	15 %
<b>Total</b>		<b>100 %</b>

\* Approximate values

### 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

## WHEN WE LEARN THIS STUFF?

(Schedule is approximate and subject to change by the instructor, and of course any new public health orders. I'm going to try to front-load the experimental stuff as much as possible in case we have to stop in-person activities before the end of the semester)

Week	Date	Activity
1	23 Aug	Safety, Lab Notebook, Measurements, 1215 Review Games
2	30 Aug	Colligative Properties of Candles
3	6 Sep	Hard Water Titration
4	13 Sep	Solution Spectroscopy
5	20 Sep	Kinetics of Food Coloring Bleaching
6	27 Sep	$K_c$ of Complex Ion Formation
7	04 Oct	Le Châtelier's Principle
8	11 Oct	University Holiday: Fall Break
9	18 Oct	Independent Project Part I
10	25 Oct	Mole Day ! (Maybe!)
11	01 Nov	$K_a$ Determination for a Weak Acid
12	08 Nov	Independent Project Part II – Experimentation
13	15 Nov	Independent Project Part II – Experimentation
14	22 Nov	Independent Project Part II – Analysis
15	29 Dec	Electrochemistry
16	08 Dec	Project Poster Session (subject to change)
<b>Final Exam Week - no assignments, no lab</b>		

Selected Dates, Deadlines & Holidays <sup>1</sup>	
Fri, 01 Sep 2023	Last day to register, ADD sections and change credit hours on LoboWEB Enrollment cancellation for non-payment on LoboWEB
Mon, 04 Sep 2023	University Holiday – Labor Day
Fri, 08 Sep 2023	Last Day to DROP without “W” grade and 100% tuition refund on LoboWEB
Thu, 12 Oct 2023	University Holiday – Fall Break (through Fri, 13 Oct, 2023)
Fri, 10 Nov 2023	Last Day to DROP <b>WITHOUT</b> Dean’s Permission on LoboWEB
Thu, 23 Nov 2023	University Holiday – Thanksgiving (through Sun, 26 Nov 2023)
Fri, 07 Dec 2023	Last day to withdraw <b>WITH</b> Dean’s Permission and change grading options

## WHEN WILL WE LEARN THIS STUFF?

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

## What You'll Learn: Course-Level Student Learning Outcomes

By the end of the course, students will be able to...

1. Demonstrate and apply 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 with the correct units, 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. Prepare solutions with an acceptable accuracy to a known concentration using appropriate glassware.
5. Perform basic laboratory operations related to, but not limited to, gas behavior, colligative properties of solutions, calorimetry, chemical kinetics, chemical equilibria, acid/base titrations, electrochemistry, metal reactivity, and qualitative analyses of ions.
6. Draw conclusions based on data and analyses from laboratory experiments.
7. Present experimental results in laboratory reports of appropriate length, style and depth, or through other modes, as required.
8. Relate laboratory experimental observations, operations, calculations, and findings to theoretical concepts presented in the complementary lecture course.
9. Design experimental procedures to study chemical phenomena

### Independent Research Project

- The independent research project for CHEM 1225L has three components: the research proposal, the lab poster, and the research presentation (PowerPoint).
- Each student or lab group will develop their independent research proposal. It must involve non-alcoholic liquids (ie. cola, milk, tea, coffee, fruit juice, well water, etc.) or foodstuff. The proposal must be approved by Dr. Godbout. No two groups will test the same hypothesis or do the same experiments.
- The research proposal is due week 8. Turn in 1 per lab group. Include the hypothesis, a COMPLETE list of materials required, a proposed method (refer to a published laboratory procedure), and references. You will be graded on originality, organization, completion, sound scientific ideology and proper grammar.
- After approval of your research proposal, you will conduct the experiments during week 11 through week 13. No unauthorized experiments should be conducted at this time. If an unauthorized experiment is conducted, you will receive a zero on all components of the independent research proposal.
- If experimentation is completed during weeks 10-12, lab time on week 13 should be used to begin to compile data, discuss interpretation with Dr. Godbout, and create the lab poster and presentation.
- The research presentation will occur in class during week 15, the poster is also due at this time.
- The poster session will occur in the hallway outside of lab during week 16.

## Academic Integrity

Having academic integrity is paramount to your success in any class. Plagiarism or cheating is not tolerated. Any instance of this will result in a grade of zero for that assignment. Here is the link to the UNM Academic Dishonesty Policy:



Academic Integrity Policy

<https://policy.unm.edu/regents-policies/section-4/4-8.html>, or scan the QR code above:

The policy states: *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 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.

## COVID-19 Health and Awareness

UNM is a mask friendly, but not a mask required, community. If you are experiencing COVID-19 symptoms, please do not come to class. If you do need to stay home, please communicate with me via email ([jgodbout@unm.edu](mailto:jgodbout@unm.edu)) or Canvas course messaging; I can work with you to provide alternatives for course participation and completion. Please let us know that you need support so that we can connect you to the right resources and please be aware that UNM will publish information on websites and email about any changes to our public health status and community response.

### Support

[Student Health and Counseling](#) (SHAC) at (505) 277-3136. If you are having active respiratory symptoms (e.g., fever, cough, sore throat, etc.) AND need testing for COVID-19; OR If you recently tested positive and may need oral treatment, call SHAC.

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



Equal Access Services

### Support

Contact me via email ([jgodbout@unm.edu](mailto:jgodbout@unm.edu)) or Canvas messaging or in office/drop-in hours.

The [UNM-Valencia Equal Access Services](#) (Sarah Clawson, Coordinator), at (505) 925-8840 or by email at [sjclawson@unm.edu](mailto:sjclawson@unm.edu), Or [Accessibility Resource Center](#) (<https://arc.unm.edu/>) at <mailto:arcsrvs@unm.edu> (505) 277-3506.

## Credit-hour Statement

This is a one credit-hour course. Class meets for one 165-minute session of laboratory instruction per week for sixteen weeks during the Fall 2023 semester. Please plan for a minimum of six hours of out-of-class work (or homework, study, assignment completion, and class preparation) each week.

### 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.

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](mailto: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](mailto: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

Our classroom and our university should always be spaces of mutual respect, kindness, and support, without fear of discrimination, harassment, or violence. Should you ever need assistance or have concerns about incidents that violate this principle, please access the resources available to you on campus. Please note that, because UNM faculty, TAs, and Gas are considered "responsible employees" by the Department of Education, any disclosure of gender discrimination (including sexual harassment, sexual misconduct, and sexual violence) made to a faculty member, TA, or GA must be reported by that faculty member, TA, or GA to the university's Title IX coordinator. For more information on the campus policy regarding sexual misconduct, please see: <https://policy.unm.edu/university-policies/2000/2740.html>.



Learning Commons Booking



Title IX Policy

### Support

[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.

### 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](#).

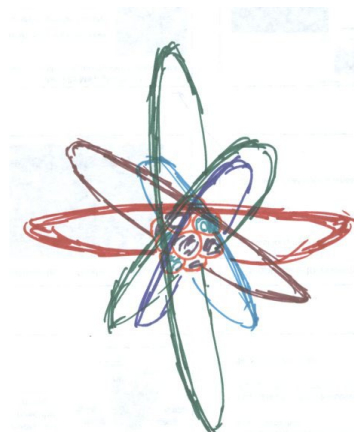
### Citizenship and/or Immigration Status

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. As for all students in the class, family emergency-related absences are normally



Citizenship/Immigration status

excused with reasonable notice to the professor, as noted in the attendance guidelines above. 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/>.





## Respectful and Responsible Learning

We all have shared responsibility for ensuring that learning occurs safely and equitably. UNM has important policies to preserve and protect the academic community, especially policies on student grievances (Faculty Handbook D175 and D176), academic dishonesty (FH D100), and respectful campus (FH C09). These are in the *Student Pathfinder* (<https://pathfinder.unm.edu>) and the *Faculty Handbook* (<https://handbook.unm.edu>). Please ask for help in understanding and avoiding plagiarism or academic dishonesty, which can both have very serious consequences.

### Support

Many students have found that time management workshops or work with peer tutors can help them meet their goals. These and are 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](#).

Your advisor, staff at the resource centers and I can help you find the right opportunities for you.

