

CHEM 1215L: General Chemistry I for STEM Majors Laboratory

Spring 2022 – Section 501 – CRN 50458

Instructor: Dr. Jerry Godbout

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Drop-in Hours:

Mondays 10:45 – 12:45 (*via Zoom*),

Wednesdays 1:30 pm – 3:30 pm,

Thursdays 9:00 am – 10:00 am and anytime by appointment, either in-person or remote (all times US MT):

Meeting Time:

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

Course Description:

This course provides practice in laboratory measurements, using laboratory glassware and instrumentation, communicating scientific information, and in performing chemical calculations.

Catalog Description:

Introduction to basic chemical laboratory principles and techniques. Meets New Mexico Lower Division General Education Common Core Curriculum Area III: Science. Prerequisite: MATH 1220 or MATH 1230 or MATH 1240 or MATH 1250 or MATH 1430 or MATH 1440 or MATH 1512 or MATH 1522 or MATH 2530 or ACT Math=>25 or SAT Math Section =>590. Pre- or corequisite: 1215 or 131.

Periodic Table of the Elements

1																	2								
H Hydrogen 1.008																	He Helium 4.003								
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							Ar Argon 39.948	
11	12											13	14	15	16	17							18		
Na Sodium 22.990	Mg Magnesium 24.305											Al Aluminum 26.982	Si Silicon 28.086	P Phosphorus 30.974	S Sulfur 32.064	Cl Chlorine 35.453	Ar Argon 39.948							36	
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 47.867	V Vanadium 50.942	Cr Chromium 51.996	Mn Manganese 54.938	Fe Iron 55.845	Co Cobalt 58.933	Ni Nickel 58.693	Cu Copper 63.546	Zn Zinc 65.38	Ga Gallium 69.723	Ge Germanium 72.631	As Arsenic 74.922	Se Selenium 78.971	Br Bromine 79.904	Kr Krypton 83.798							86	
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54							86	
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 102.905	Pd Palladium 106.42	Ag Silver 107.868	Cd Cadmium 112.414	In Indium 114.818	Sn Tin 118.710	Sb Antimony 121.757	Te Tellurium 127.6	I Iodine 126.905	Xe Xenon 131.29							118	
55	56	57-71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86							118	
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 204.38	Pb Lead 207.2	Bi Bismuth 208.980	Po Polonium 209	At Astatine 210	Rn Radon 222			118	
87	88	89-103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118							118	
Fr Francium 223	Ra Radium 226	Actinides					Rf Rutherfordium 261	Db Dubnium 262	Sg Seaborgium 266	Bh Bohrium 264	Hs Hassium 277	Mt Meitnerium 268	Ds Darmstadtium 271	Rg Roentgenium 272	Cn Copernicium 285	Uut Ununtrium 288	Fl Flerovium 289	Uup Ununpentium 288	Lv Livermorium 293	Uus Ununseptium 294	Uuo Ununoctium 294			118	
57	58	59	60	61	62	63	64	65	66	67	68	69	70	71							118				
La Lanthanum 138.905	Ce Cerium 140.116	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							118				
89	90	91	92	93	94	95	96	97	98	99	100	101	102	103							118				
Ac Actinium 227	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 247.07	Bk Berkelium 247.07	Cf Californium 251.08	Es Einsteinium 252	Fm Fermium 257	Md Mendelevium 258	No Nobelium 259	Lr Lawrencium 262							118				



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 Blackboard Learn daily!**

COURSE REQUIREMENTS (Resources and Conduct)

- Chemistry: A Molecular Approach (3rd or 4th ed)
- Safety goggles, Lab Coat, Lab Notebook
- Calculator (non-graphing) with log/antilog and exponential functions
- Internet Access: *Blackboard Learn* and *UNM email address must be checked daily!*
- Mandatory laboratory clothing: **GOGGLES**, closed toed flat **shoes** (no high heels, no exposed toes, no exposed heels), and **LAB COATS** are all **REQUIRED FOR MOST LABS. Students without proper personal protective equipment will not be allowed in lab**
- Laboratory **SAFETY AND CLEANLINESS WILL BE CLOSELY MONITORED.** (*Safety Rules may be found in the first lab worksheet.*) Points will be deducted for safety violations (food in lab, not wearing goggles properly, improper disposal of chemicals, etc.) and for improper

HOW IS YOUR GRADE DETERMINED?

(Exams, Quizzes, Homework, and the Like)

	How Many*	Points
Experiments & Activities	10	300
Quizzes	6	10
Infographic Proposal and Draft	1	40
Final Infographic	1	80
Final Exam	1	100
Total		530

* Approximate values

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.**

WHAT DO I NEED FOR AN A?

(What's the grading scale?)

Earn This Many Points	Get This Grade
519	A+
488	A
477	A-
466	B+
440	B
424	B-
413	C+
387	C
366	C-
355	D+
329	D
318	D-
290	F+
0	F

The exam will consist of three components: a question/answer component, basic measurements, and developing a procedure based on previous labs. A 15 pts Bonus will be earned for no lab safety violations

Student Learning Objectives

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. 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. Demonstrate mastery in experimental techniques, such as pressure measurements, calorimetric measurements, and spectrophotometric measurements.
7. Draw conclusions based on data and analyses from laboratory experiments.
8. Present experimental results in laboratory reports of appropriate length, style and depth, or through other modes as required.
9. Relate laboratory experimental observations, operations, calculations, and findings to theoretical concepts presented in the complementary lecture course.
10. Design experimental procedures to study chemical phenomena.



Tentative Schedule – Check UNM Learn and email for updates

Meeting	CHEM 1215L Schedule	Required
1 19 Jan 2022	Laboratory Introduction (Schedule, Syllabus, Safety, Lab Notebook, Measurements, Unit Conversion Activity)	Nothing yet
2 26 Jan 2022	It's All About the Weight (Density, Precision, Accuracy, Significant Figures) Friday, Feb 3rd – Last day to drop with full refund	BBL Quiz PreLab: Sci Method Lab coat, goggles, closed-toe shoes
3 02 Feb 2022	Popcorn Theories	BBL Quiz PreLab: Sci Method Lab coat, goggles, closed-toe shoes
4 09 Feb 2022	Pottery and Pigments (Reactivity of Ionic Compounds)	Lab coat, goggles, closed-toe shoes Lab Notebook (no prelab)
5 16 Feb 2022	Chemical Reactions of Copper (Reaction Stoichiometry and Percent Yield)	Lab coat, goggles, closed-toe shoes Lab ntbk with completed pre-lab Turn in Pottery & Pigments Lab
6 23 Feb 2022	Acid Base Titration (Reaction Stoichiometry)	Lab coat, goggles, closed-toe shoes Lab ntbk with completed pre-lab
7 02 Mar 2020	Synthesis of Biodiesel	Lab coat, goggles, closed-toe shoes Lab ntbk with completed pre-lab
8 09 Mar 2022	The Automobile Airbag (Gas Stoichiometry)	Lab coat, goggles, closed-toe shoes Lab ntbk with completed pre-lab
16 Mar 2022	Spring Break	
9 23 Mar 2022	Calorimetry Lab – Heat of Combustion of Biodiesel	Lab coat, goggles, closed-toe shoes Lab ntbk with completed pre-lab
10 30 Mar 2022	Infographic: Background <ul style="list-style-type: none"> • Assign topics to lab groups • Discuss infographic requirements • Begin research and background information 	Bring laptops if you have them (not required).
11 086 Apr 2022	Atomic Spectra (instrument calibration) Atomic Trend Activity	Lab coat, goggles, closed-toe shoes Lab ntbk no prelab due Turn in Atomic Spectra Lab before leaving.
12 13 Apr 2022	Electron Configuration Activity	Infographic First Draft due via email
13 20 Apr 2022	LDS/VSEPR/IMF Activity	Lab ntbk with completed pre-lab Infographic Final Draft due via email
14 27 Apr 2022	Lab Practical and Final Exam	Lab coat, goggles, closed-toe shoes Lab ntbk for reference.
15 04 May 2022	Infographic Presentations and Practical Make-Ups	

Selected Important Dates & Holidays¹	
Mon, 17 Jan 2022	University Holiday – Martin Luther King Day
Fri, 28 Jan 2022	Last day to register, ADD sections, and change credit hours on LoboWeb Enrollment cancellation for non-payment
Fri, 04 Feb 2022	Last Day to DROP without “W” grade and 100% tuition refund on LoboWEB,
Fri, 11 Feb 2022	Last Day to CHANGE grade option
Sun, 13 Mar 2022	University Holiday – Spring Break (through Sat, 22 Mar 2020)
Fri, 15 Apr 2022	Last Day to withdraw WITHOUT Dean’s Permission
Fri, 06 May 2022	Last Day to withdraw WITH Dean’s Permission

¹ For a complete and up-to-date calendar, please see <https://registrar.unm.edu/semester-deadline-dates/spring-2022.html>

Respect the UNM Community by Preserving Health

UNM Administrative Mandate on Required Vaccinations

UNM requires COVID-19 vaccination and a booster for all students, faculty, and staff, or an approved exemption (see: [UNM Administrative Mandate on Required Vaccinations](#)). Proof of vaccination and booster, or a [medical, religious, or online remote exemption](#), must be uploaded to the [UNM vaccination verification site](#). Failure to provide this proof may result in a registration hold and/or disenrollment for students and disciplinary action for UNM employees.

Booster Requirement: Individuals who received their second dose of a Pfizer or Moderna vaccine on or before June 15, 2021, or their single dose of a Johnson & Johnson vaccine on or before October 15, 2021, must provide documentation of receipt of a booster dose no later than January 17, 2022.

Individuals who received their second dose of a Pfizer or Moderna vaccine after June 15, 2021 or who received their single dose of Johnson & Johnson after November 15, 2021 must provide documentation of receipt of a booster within four weeks of eligibility, according to the criteria provided by the FDA (6 months after completing an initial two-dose Moderna vaccine, 5 months after completing the Pfizer sequence, and 2 months after receiving a one-dose Johnson and Johnson vaccine).

International students: Consult with the [Global Education Office](#).

Exemptions: Individuals who cannot yet obtain a booster due to illness should request a [medical, religious, or online remote exemption](#) (which may have an end date) and upload this to the [vaccination verification site](#).

Medical and religious exemptions validated in Fall 2021 (see your email confirmation) are also valid for Spring 2022 unless an end date was specified in the granting of a limited medical exemption. Students must apply for a remote online exemption every semester.

UNM Requirement on Masking in Indoor Spaces

All students, staff, and instructors are required to wear face masks in indoor classes, labs, studios and



meetings on UNM campuses, [see the masking requirement](#). Students who do not wear a mask indoors on UNM campuses can expect to be asked to leave the classroom and to be dropped from a class if failure to wear a mask occurs more than once in that class. Students and employees who do not wear a mask in classrooms and other indoor public spaces on UNM campuses are subject to disciplinary actions. **Medical/health grade masks are the best protection against the omicron variant and these masks should be used, rather than cloth.**

COVID-19 Symptoms and Positive Test Results

Please do not come to a UNM campus if you are experiencing symptoms of illness, or have received a positive COVID-19 test (even if you have no symptoms). Contact your instructors and let them know that you should not come to class due to symptoms or diagnosis. Students who need support addressing a health or personal event or crisis can find it at the [Lobo Respect Advocacy Center](#).

Communication on change in modality

The university may direct that classes move to remote delivery at any time to preserve the health and safety of the students, instructor and community. Please check your email and your UNM Learn site regularly for updates about our class, and please check <https://bringbackthepack.unm.edu> regularly for general UNM updates about COVID-19 and the health of our community.

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.

Equal Access Services (Valencia Campus)

If you have a documented condition that may affect your performance in this class, please register with Equal Access Services as soon as possible so accommodations can be arranged in a timely manner. EAS can provide a quiet place to take exams, additional time, and additional services if there is a documented need. For more information, please see their website at <https://valencia.unm.edu/students/advisement/equal-access-services.html>, or scan the QR code above:



Equal Access Services

Sexual Misconduct and Gender Discrimination

In an effort to meet obligations under Title IX, UNM faculty, teaching assistants, and graduate assistants are considered "responsible employees." by the Department of Education

<http://www2.ed.gov/about/offices/list/ocr/docs/q-a-201404-title-ix.pdf>). This

designation requires that any report made to a faculty member, TA, or GA regarding sexual misconduct or gender discrimination must be reported to the Office of Equal Opportunity and the Title IX Coordinator. For more information on this policy, <https://policy.unm.edu/university-policies/2000/2740.html> or scan the QR Code above:



Title IX Policy

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.

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 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/>



Citizenship/Immigration status