CHEM-1120C Introduction to Chemistry for Non-Majors

Summer 2020 – Section 501 – CRN 66852

Instructor: Dr. Jerry Godbout

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Office Hours: Monday 10:30 am – 11:45 am, *via* Zoom. Other times will be determined based on class convenience, and anytime by appointment

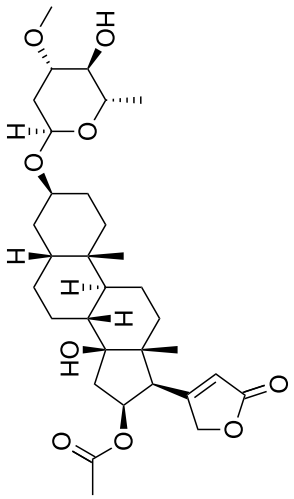
Meeting Times: Zoom Classroom: Tuesday & Thursday 12:00 – 1:15 pm. Link provided in UNM Learn

COURSE DESCRIPTION: The study of stuff, and what it does

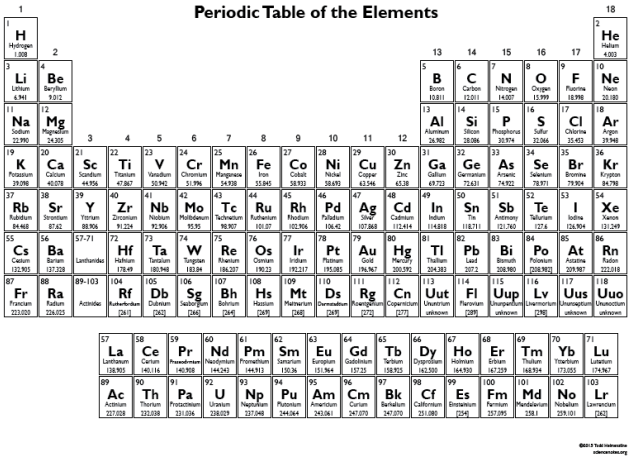
COURSE DESCRIPTION: This course covers qualitative and quantitative areas of non-organic general chemistry for non-science majors and some health professions. Students will learn and apply principles pertaining, but not limited to, atomic and molecular structure, the periodic table, acids and bases, 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.

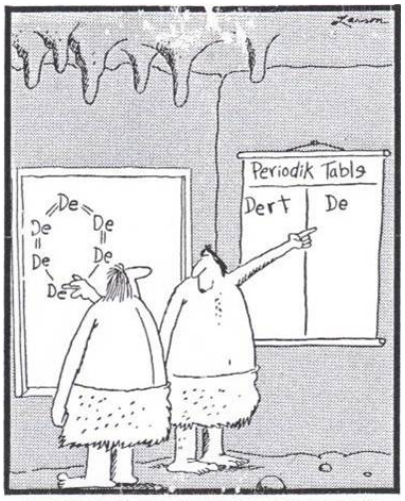
Credit for both this course and CHEM 1215 may not be applied toward a degree program. Credit for both this course and CHEM 131 may not be applied toward a degree program. Meets New Mexico Lower Division General Education Common Core Curriculum Area III: Science (NMCCN 1114). Prerequisite: MATH 1215Z or MATH 1220 or MATH 1240 or MATH 1430 or MATH 1440 or MATH 1512 or MATH 1522 or MATH 2530 or ACT Math =>22 or SAT Math Section =>540.

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



What is this molecule? Tell me (email) for some extra credit! Its formula is $C_{32}H_{48}O_9$





Early chemists describe the first dirt molecule

WHAT YOU'LL LEARN

COURSE TEACHING & LEARNING OUTCOMES

By the end of this course, a successful student will be able to:

Lecture Component SLOs

1. Use the different systems of measurements and perform conversions within the same system of measurement and between different systems of measurements
2. Identify elements from their name or 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 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 acid and base behavior and the nature of buffer solutions

Laboratory Component SLOs

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.

If none of these make any sense to you at the beginning of the semester – Fret Not!
We're literally here so you can learn this stuff!

COURSE/INSTRUCTOR COMMUNICATIONS

- Email is the most effective. Electronic communication for this course **MUST** be through your Learn Messaging.
- 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!***

WHAT YOU'LL NEED
(COURSE MATERIALS)

- **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 Go to the fol lowing web address or scan the QR code on the left. This textbook is available for free online! If you prefer, you can also get a print version at a very low cost. The text is available in web view and PDF for free. You can also choose to purchase on iBooks or get a print version via from OpenStax on Amazon.com. You can use whichever formats you want. Web view is recommended -- the responsive design works seamlessly on any device. If you buy on Amazon, make sure you use the link on your book page on open-stax.org so you get the official OpenStax print version.

  Course Text

  Access to UNM Valencia networks, UNM Learn and UNM email: Network access is necessary for some lab activities. Course materials will be posted on UNM Learn and important class announcements will be made to your UNM email address. Please check your email regularly. Valencia campus provides internet and computer access at the library, Learning Resource Center, and STEM center.
- Homework: Access to CHEM 101 system (http://chem101.co, course code F3RLGC)
- **A scientific calculator** with log/antilog and exponential functions: TI-30Xa TI-30X IIS TI-30XS Casio or Sharp equivalents.
- **A notebook (or space in a binder) to**
  - write down, space out the problems/questions, and to show your work before you submit answers electronically; (3) have it readily available when working with fellow classmate(s), tutor(s) and/or instructor; (4) use as review/study material.

How Do I Earn All Those Points?

(Exams, Quizzes, and the Like)

	How Many**	Points Each	Points Total
Final Exam	1	150	150
In-Semester Exams	4	130	520
Unit Quizzes	16	15	240
Homework	16	20	320
Labs/Rec	14	25	350
Total			1500*

The unit assignments and the Lab/Recitation assignments should be low-stakes, which means that you can expect most of the possible points available if you complete the assignment. They represent 57% of the course points.

*If you do the math, you will notice that this adds up to 1580 points. The scale however, is based in 1500 points, so there 80 points of extra credit. This means that there are actually a total of 80 points of extra credit possible.

What Will Each Week Be Like?

We will cover approximately 1 unit per week, with a unit roughly corresponding to a chapter in the text. Each unit will have:

- Group activity(ies) to be worked on in the Zoom class meeting
- A series of lecture videos
- A graded quiz covering the unit material
- A lab/recitation activity that will reinforce key lecture concepts or introduce other concepts not covered in the "Lecture" material.

The exact nature of the activities for each unit will vary from unit to unit.

What Will My Routine Be Like?

This is really up to you! My recommendation, however, is KEEP UP WITH THE MATERIAL! This class covers a lot of material in a short period of time. Expect for this class to require 8-10 hours per week if you want to do well.

How Many Points Do I Need For an A?

(What's the grading scale?)

Earn This Many Points	Get This Grade
1425	A+
1350	A
1320	A-
1275	B+
1200	B
1170	B-
1125	C+
1050	C
1020	C-
975	D+
900	D
870	D-
825	F+

Exams

Think of these as opportunities for you to show just how much you have learned. The exam format consists of two types of questions: multiple-choice, and partial credit. A Practice Exam with the Answer Key will be published to help you prepare.

There are 4 scheduled in-class exams tentatively on the dates below, although the instructor reserves the right to alter course schedule as the semester progresses. Students will be given advance notice of any change.

Exam	Units	Date
1	1 – 4	
2		
3		
3		
Final**		

**The final exam must be taken to pass the course, regardless of points accumulated to that point

WHEN WE LEARN THIS STUFF?

(Schedule is approximate and subject to change by the instructor)

Unit	*Topics*
1	Math you'll need to know(1.4 – 1.6, Appendix B)
2	The Mole
3	Atoms, Ions, Periodic Table: 2.1 – 2.5
4	Electronic Structure and Periodic Properties of Elements (3.1 – 3.7)
	Exam 01: Units 1 – 4
5	Chemical Bonding and Molecular Geometry (4.1 – 4.6)
6	Composition of Substances and Solutions (6.1 – 6.4)
7	Stoichiometry of Chemical Reactions (7.1 – 7.4)
	Exam 02: Units 5 – 7
8	Gases (8.1 – 8.5)
9	Thermochemistry (9.1 – 9.4)
10	Liquids and Solids (10.1 – 10.6)
11	Solutions and Colloids (11.1 – 11.4)
	Exam 03 Units 8 – 12
12	Kinetics (17.1 – 17.7)
13	Fundamental Equilibrium Concepts (13.1 – 13.4)
14	Acid-Base Equilibria (14.1 – 14.7)
15	Equilibria of Other Reactions Classes (15.1 – 15.2)
16	Electrochemistry (16.1 – 16.3)
	Exam 04 Units 13 – 16
	Final Exam (Stay tuned!)

Important Dates & Holidays (for the most current information, check http://valencia.unm.edu/academics/calendar/fall.html)	
Mon, 17 Aug 2020	Instruction begins
Fri, 28 Aug 2020	Last day to register, ADD sections, and change credit hours on LoboWeb Last Day to CHANGE grade option without permission Enrollment cancellation for non-payment
Fri, 04 Sep 2020	Last Day to DROP without "W" grade and 100% tuition refund on LoboWEB, Last Day to CHANGE grade option with permission
Mon, 07 Sep 2020	University Holiday – Labor Day
Wed, 07 Oct 2020	University Holiday – Fall Break
Tue, 03 Nov 2020	University Holiday – Election Day!
Fri, 06 Nov 2020	Last Day to withdraw **WITHOUT** Dean's Permission
Wed, 25 Nov 2020	Last day of in-person classes
Thu, 26 Nov 2020	University Holiday – Thanksgiving (extends through Fri, 27 Nov 2020)
Mon, 30 Nov 2020	Remote instruction week (for **all** classes, extends through Fri, 04 Dec 2020)
Fri, 04 Dec 2020	Last day to withdraw **WITH** dean's permission Last day to change grading options **WITH** dean's permission
Sat, 05 Dec 2020	Last day of instruction
Mon, 07 Dec 2020	Remote final exam week (through Sat) Date time for use TBA.

Things That Aren't Chemistry, But Are Still Important
(Campus and University Policies)

Respect the UNM Community by Preserving Health

This may not apply to this class specifically, but will apply for any in-person class, or if you have in-person business/appointments, etc. on any UNM campus

You have the ability to prevent the spread of COVID-19 and to preserve the health of fellow students, your instructor, staff and the community by following UNM health protocols. The UNM Provost Administrative Directive on Mandatory Student Face Covering and Symptom Reporting of July 9, 2020 requires that **all students on UNM-Main and UNM branch campuses wear face masks in the face-to-face classroom and on campus unless they have a specific mask accommodation (confidentially documented with the Accessibility Resource Center).** UNM Provost Administrative Directive is consistent with Governor Lujan Grisham's Public Health Emergency Order as amended, and the Public Health Order of the New Mexico Health Secretary. It also requires daily participation in symptom screening through covidscreen, which will be sent via UNM e-mail.

Acceptable masks and mask wearing in class: A two-layer mask that covers the nose and mouth and that is cleaned regularly is acceptable. A face shield is not sufficient protection. It is vital that you wear your mask correctly, covering your nose and mouth. Removing your mask for an extended period to eat or drink in class violates the Provost Administrative Directive and endangers others.

Mask Wearing Accommodation*:* Individuals with a documented disability or diagnosis may seek accommodation with the UNM Accessibility Resource Center (ARC) (https://arc.unm.edu/). Individuals do not need to reveal private information to an instructor. ARC will require documentation of health requirements, which will be kept confidential. The instructor will be informed only of any need for accommodation.

Consequences of not wearing a mask properly: Unless you have an ARC-approved accommodation, if you don't wear a mask, or if you do not wear a mask properly by covering your nose and mouth, you will be asked to leave class. If you fail to wear a mask properly on more than one occasion, you can expect to be dropped from the class. If you insist on remaining in the classroom while not wearing a mask (without an ARC-determined accommodation), class will be dismissed for the day to protect others and you will be dropped from the class immediately.

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:

https://policy.unm.edu/regents-policies/section-4/4-8.html. or scan the QR code at right:

Academic Integrity Policy

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 at 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 (see page 15 - http://www2.ed.gov/about/offices/list/ocr/docs/qa-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 at right:

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 yo ur 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