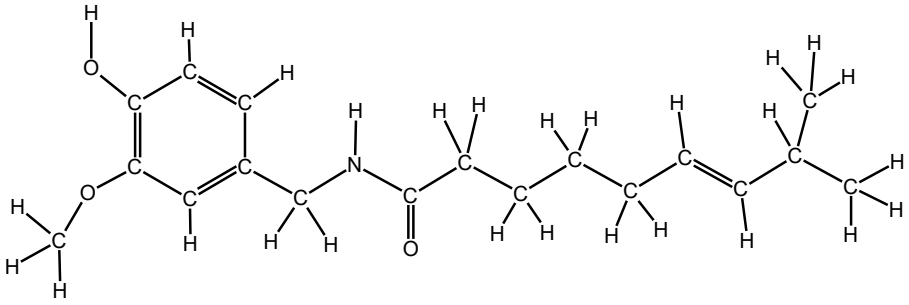



**Class Meetings**

**Lecture**: Tuesday & Thursday 10:30 – 11:45 am, US MT VAAS 140

**Lab/Recitation**: Tuesday 8:30 am – 10:29 pm, US MT VAAS 128

**Modality**: Both components are 100% face-to-face

**Instructor Contact Information:**

**Office:** VAAS 102A

**Phone**: 505.925.8611

**Drop-in Hours** (all times US MT)**:** 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

**Email:** jgodbout@unm.edu

**COURSE DESCRIPTION #1:**The study of stuff, and what it does

**COURSE DESCRIPTION #2:**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.

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

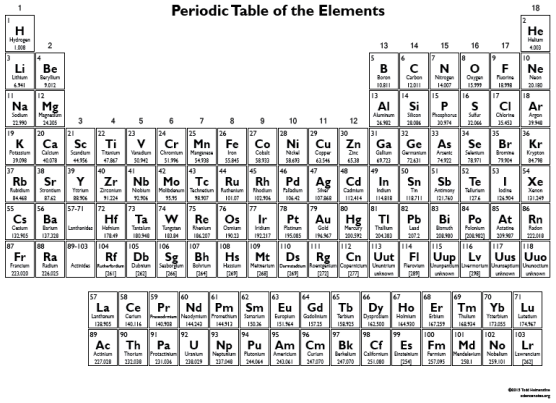
# WHAT YOU'LL LEARN

COURSE 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



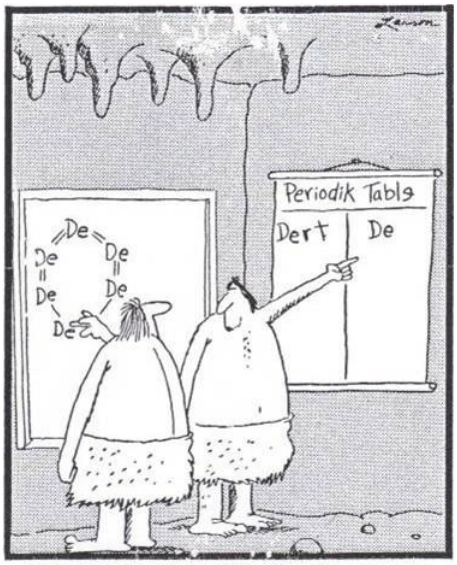

**Laboratory Component SLOs**

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: This is the most effective. Electronic communication for this course **MUST** be through your Learn Messaging.
- Drop-in Hours: These are times that I have specifically set aside to meet with students. There is no need to schedule a meeting during those times. If you can talk to me during the stated times, please do so. If you cannot meet during those times, I am always happy to schedule a meeting at a mutually agreeable time. When requesting, 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!***



Early chemists describe the first dirt molecule

## 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 get a print version via from OpenStax on Ama zon.com. You can use whichever formats you want. Web view is recom mended - 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 author.

  Course Text

  **Access to Internet, UNM Valencia networks, UNM Learn and UNM email:** Network access is necessary for most assignments, and may be necessary for everything. Course materials will be posted on UNM Learn and important class announcements will be made to your Learn account. Please check your email regularly. The Valencia campus provides internet and computer access at the library, Learning Resource Center, and STEM center.
- **Safety glasses/goggles for lab:** please purchase those in the bookstore to avoid any question of their safety rating
- **A NON-PROGRAMMABLE scientific calculator** with log/antilog and exponential functions: TI-30Xa TI-30X IIS TI-30XS Casio or Sharp equivalents (**cell phones and graphing calculators are not acceptable**). Visit http://www.vrcworks.net/blog/how-to-identify-calculator-is-programmable-or-nonprogrammable-calculator/ will help you tell the difference, or ask your instructor.
- **A notebook or space in a binder (preferrable) to**
  - Take notes, keep class handouts, and work out problems/questions. This will allow you to have it readily available when working with fellow classmate(s), tutor(s) and/or instructor; and to use as review/study material.

## *How Do I Earn All Those Points?*

(Exams, Quizzes, Homework, and the Like)

| | How Many | Points Each | Points Total |
|---|---|---|---|
| Final Exam | 1 | 150 | 150 |
| Exams | 4 | 90 | 360 |
| Chapter Problems | 14 | 10 | 140 |
| Unit Assignments | 16 | 35 | 560 |
| Labs/Recitation | 14 | 25 | 350 |
| Total | | | 1500* |

*If you do the math, you will notice that this adds up to 1560 points. The scale however, is based in 1500 points, so there 10 points of extra credit. In addition, the 900-point in-class exams will actually have 100 points. This means that there are actually a total of 100 points of extra credit possible.

## *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. Expect these to be difficult. The exam format consists of two types of questions: multiple-choice, and partial credit. To help you figure out how well you understand the material, approximately a week in before each exam, a Practice Exam with the Answer Key will be published for students' use

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.

| | Units | Date |
|---|---|---|
| Exam 1 | 1 – 3 | 14 Feb |
| Exam 2 | 4 – 7 | 10 Mar |
| Exam 3 | 8 – 12 | 11 Apr |
| Exam 4 | 13 – 16 | 03 May |
| Final** | All | 10 May |

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

## What Will Each Class Be Like?

- **Course Business:** Announcements and the like
- **Topic Introduction:** A brief introduction of the main concepts behind the day's topic
- **Group Activity:** Structured, collaborative exercises to guide you mastery the day's topic(s). This will be most of the day
- **Reflection:** an opportunity to put the day's lesson into larger perspective, and formulate/ask questions

## What Will My Routine Be Like?

- **Before Class**: Complete any prepatory assignment (reading, video, *etc*.)
- **During Class:** Pay attention. Take notes. Work with your group to master concepts. The more you put in, the more you'll get out
- **After Class: WORK ON CHAPTER PROBLEMS**, work on Unit Assignments, think of questions for office hour visits, etc.
- **Repeat 29 times!**

## 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 | Atoms, Ions, Periodic Table: 2.1 – 2.5 |
| 3 | The Mole |
| | **Exam 01: Units 1 – 3** |
| 4 | Electronic Structure and Periodic Properties of Elements (3.1 – 3.7) |
| 5 | Chemical Bonding and Molecular Geometry (4.1 – 4.6) |
| 6 | Chemical Nomenclature (4.3) |
| 7 | Composition of Substances and Solutions (6.1 – 6.4) |
| | **Exam 02: Units 5 – 8** |
| 8 | Stoichiometry of Chemical Reactions (7.1 – 7.4) |
| 9 | Gases (8.1 – 8.5) |
| 10 | Thermochemistry (9.1 – 9.4) |
| 11 | Liquids and Solids (10.1 – 10.6) |
| 12 | Solutions and Colloids (11.1 – 11.4) |
| | **Exam 03 Units 9 – 12** |
| 13 | Kinetics (17.1 – 17.7) |
| 14 | Fundamental Equilibrium Concepts (13.1 – 13.4) |
| 15 | Acid-Base Equilibria (14.1 – 14.7, 15.1 – 15.2) |
| 16 | Electrochemistry (16.1 – 16.3) |
| | **Exam 04 Units 13 – 16** |
| | **Final Exam (Tuesday 10 May, 10:30 am – 12:30 pm US MT)** |

So that molecule on the top of the front page – send me a message with its name for 10 class points. Offer expires after exam 2 is distributed.

# Other Things That Aren't Chemistry, But Are Still Important
## (Class Policies and Important Dates)

- **Be There:** Seriously, you'll do a lot better if you show up than if you don't. Students are expected to attend all meetings of the classes in which they are enrolled, barring illness and other mitigating circumstances
  - I will exercise my discretion without notice to drop any student who:
    - misses the first two lectures and first lab/recitation;
    - has not completed any assignments by the end of the 2nd week;
    - Once you begin attending and/or participating in class, it is your responsibility to drop the class if they you wish to do so. Otherwise, you will receive a grade based on the points you have accumulated.
  - An excused absence must be communicated.
  - Students are limited to 2 excused absences BUT they may not be used for days of exams. Make-up exams will be given only with documentation of the mitigating circumstance
- **Be on time.** Late arrivals and early departures are disrespectful, disruptive and should be avoided if at all possible. Absences due to illness or any mitigating circumstance are unavoidable but must be documented or approved in advance if possible. If you must miss a lecture or lab, email me ASAP in order to get your absence excused and discuss when you will turn in or make up any allowable assignments. Students are responsible for all assignments regardless of attendance.
- **Your job begins when class ends:** Practice problems (homework) will be assigned for each chapter. Homework for each chapter will be collected on the day of the exam for each chapter. It is the responsibility of the student to keep up with the assignments as the material is covered in class. **DO NOT WAIT UNTIL THE NIGHT BEFORE THE EXAM TO START THE CHAPTER PROBLEMS AND/OR UNIT ASSIGNMENTS!**

| Selected Important Dates & Holidays[1] | |
|---|---|
| Mon, 17 Jan 2022 | University Holiday – Martin Luther King Jr. Day |
| Fri, 28 Jan 2022 | Last day to register, ADD sections, change grade mode, and change credit hours<br>Enrollment cancellation for non-payment |
| Fri, 04 Feb 2022 | Last Day to DROP without "W" grade and 100% tuition refund |
| Sun, 13 Mar 2022 | University Holiday – Spring Break (through Sun, 20 Mar, 2022) |
| Fri, 15 Apr 2022 | Last Day to DROP **WITHOUT** Dean's Permission |
| Fri, 06 May 2022 | Last day to withdraw **WITH** Dean's Permission and change grading options |
| Tue 10 May 2022 | Final Exam (for this section) |

[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/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 above:

Title IX Policv

## 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