CHEM 115: Preparation for Chemistry

Fall 2018 – Section 501 – CRN 53958

Instructor: Dr. Jerry Godbout

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Office Hours: Mon 1:00 – 3:00 pm, Wed 2:00 – 4:00 pm,
Thu 9:00 – 10:00 am, and anytime by appointment

Meeting Times: Tuesday & Thursday (501) Lecture: 10:30 – 11:45 am, VAAS 129

COURSE DESCRIPTION

This course is designed to introduce students to the study skills and basic math, science, and chemistry knowledge required to succeed in General Chemistry.

WHAT YOU'LL LEARN

COURSE TEACHING & LEARNING OUTCOMES
By the end of this course, student will be able to:

Simplify Equations:

- with multiple terms with like powers: $5x^4 + 4 + 6x - 2 - 3x^2 + 4x$
- containing exponents: $(-5 \times 10^{-12})^4$
- containing multiple variables and exponents: $\left(\frac{3m^2 2n^6}{6n^2}\right)^4$

Calculate:

- The mean of a given data set.
- answers in scientific notation
- answers with the indicated number of significant figures

Unit Conversions:

- identify the SI unit and its symbol used to measure given physical properties (volume, time, mass, pressure, etc.)
- correctly use unit prefixes to convert within the SI system (ie, convert Pa to kPa)
- use references to find conversion factors and convert between measurement systems (ie, convert *atm* to *kPa*)

Basic Science:

- use the Law of Conservation of Energy to identify important points on a potential energy diagram (point of greatest/lowest potential energy, point of greatest/lowest kinetic energy, etc.) and describe the conversion of chemical potential energy to heat of a reaction.

Subatomic Particles:

- identify the following properties of subatomic particles: name, symbol, charge, mass, location.
- identify the number of protons, neutrons, and electrons in atoms and ions based on elemental symbol, charge, and isotope number.
- identify physical vs chemical changes based on molecular images.
- identify species present (solid, liquid, gas) and physical changes (boiling point, melting point) on the temperature for energy diagram.

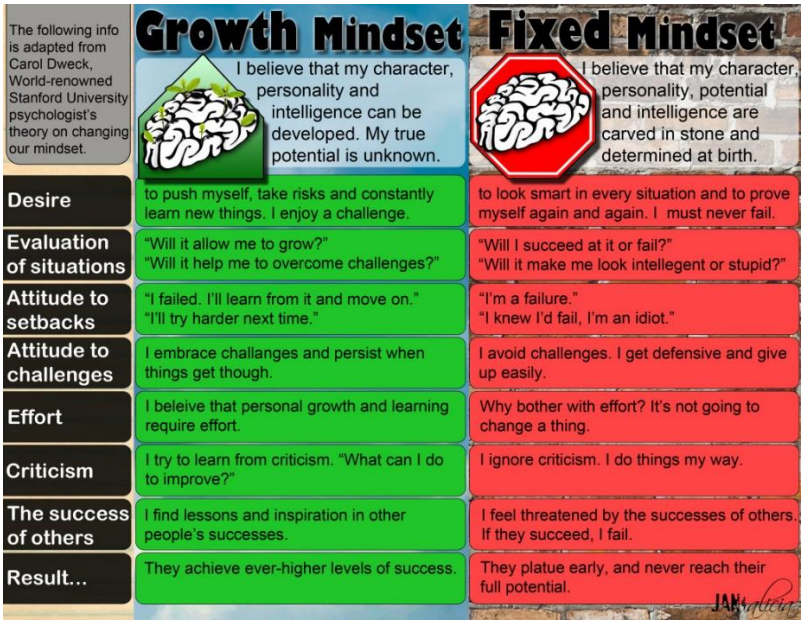
Compounds and Molecules:

- write the chemical formula for an organic molecule from a given structure: CHNO
- identify the charge of Type I ions: Groups I, II, V, VI, VII
- identify the charge of ions from a given compound formula
- identify the formula of a compound formed from given ions.
- use Avogadro's Number and Molar Mass to convert between moles, mass, and number of atoms and simple compounds.

Reactions:

- balance precipitation, acid/base, and combustion reactions.
- complete simple stoichiometric calculations for reagents using mass or volume/concentration information.
- write molecular and net ionic equations.
- Identify exothermic and endothermic reactions based on reaction energy diagrams and the sign of the reaction enthalpy.
- complete simple enthalpy calculations.

If none of these make any sense to you at the beginning of the semester – No problem! We're literally here so you can learn this stuff!



WHEN WE LEARN THIS STUFF?

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

Mtg	Date	Topics	Class Activities*	References
1	Tue 21 Aug	Course overview Study plan Scientific Notation Multiply/divide sci. not.	Simplify equations Calculator check Simple calculations	Class Notes Text Appendix B
2	Thu 23 Aug	Significant figures SI system & Unit Prefixes Unit conversions	Syllabus/BPR Quiz Unit Conversions SI system	Text 1.4 – 1.6
3	Tue 28 Aug	Density Accuracy and precision of data sets	Density, Accuracy & Precision	
4	Thu 30 Aug	Conservation of Energy Conservation of Mass Definite Proportions Multiple Proportions	Dalton's atomic theory GA	
5	Tue 4 Sep	Subatomic particles Atoms, Isotopes, Ions Periodic table	Atoms, Isotopes, and Ions GA	
6	Thu 6 Sep	Ionic compounds Covalent molecules Chemical vs. physical change	Ions vs. Covalent Molecules GA Chemical vs. Physical Changes GA	
7	Tue 11 Sep	Balanced chemical equations Combustion	BCE GA Combustion GA	
8	Thu 13 Sep	Avogadro's Number Molar mass	Chemical conversion GA	
9	Tue 18 Sep	Stoichiometry	Stoichiometry GA	
10	Thu 20 Sep	Molarity of Solutions	Molarity GA	
11	Tue 25 Sep	Precipitation and acid/base reactions	Reactions GA	
12	Thu 27 Sep	Energy	Energy Conversion GA	
13	Tue 2 Oct	Reaction enthalpy	Reaction Enthalpies GA	
14	Thu 4 Oct	Catch up/review		
15	Tue 9 Oct	Final Exam	Ace the Final!	

*Subject to change

WHAT YOU'LL ABSOLUTELY NEED

(REQUIRED COURSE MATERIALS)

- **A positive attitude and a desire to learn!**
- **Access to UNM Learn and UNM email:** 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.
- **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 binder and/notebook**
    - keep and organize notes
    - keep and organize assignments

WHAT IT WOULDN'T HURT TO HAVE

(RECOMMENDED COURSE MATERIALS)

- Access to *Chemistry: A Molecular Approach*, N. Tro, or any other General Chemistry text. This particular one is available in the library and the STEM center, and the Learning Center, since it's currently being used for CHEM 121. You may use these copies, but cannot remove them from the room. The current edition is the 4th, but either the 3rd or 4th are fine. Purchasing a used textbook (3rd editions are quite economical at this point) is recommended, but not required.

WHAT WE'RE GONNA DO TOGETHER

(CLASS ACTIVITIES)

- **Bullet Point Review (BPR) Notes:** Every class period has a required PRE-reading assignment and quiz. The reading sections can be found in the syllabus. BPR notes should be taken on the reading section 1-5 days before class. Guidance for BPR notes will be discussed on the first day of class.
- **Bullet Point Review (BPR) Quizzes –** these quizzes will take place at the beginning of each class. *They must be completed by 9:15 am.* You may begin the quiz whenever you arrive Quizzes will have 10-20 questions. You may use your BPR notes to take the quiz.
- **In-Class Worksheets/Activities** – Any worksheets or activities not completed during class time will be due by the beginning of the following class. No assignments will be taken after 9 am of the following class day.
- **Final Exam:** The final exam will be taken during the last class session (Tuesday, 11 October 2018) The format of the exam is TBD.

WHAT YOU NEED TO DO TO DO WHAT WE'RE GONNA DO WELL

(COURSE REQUIREMENTS AND GOOD STUDY HABITS)

- **Attend Class:** you may not miss more than 2 class sessions (there are only 15 meetings!)
- **Attend Tutoring:** attend at least 8 tutoring sessions of >15 min each
- **Bring a Calculator:** have log/antilog and exponential functions
- **Have Internet Access:** Blackboard Learn access and a UNM email address are required and should be checked daily for course updates.
- **Keep a Notebook:** spiral bound or binder with loose-leaf paper inserted for taking and organizing notes
- **Be positive:** You got this!

HOW WILL YOU KNOW HOW YOU'RE DOING?

(GRADES)

Bullet Point Review Quizzes	30%e
In-class Problems and Activities	40%
Final Exam	30%

75% of the total points must be earned to receive credit for CHEM 115

NOT CHEMISTRY, STILL IMPORTANT STUFF (CAMPUS POLICIES)

Important Dates & Holidays	
Fri 24 Aug 2018	Last day to register, ADD sections, and change credit hours Last Day to CHANGE grade option
Fri 31 Aug 2018	Enrollment cancellation for non-payment Last Day to DROP without "W" grade and 100% tuition refund on LoboWEB
Mon 03 Sep 2018	University Holiday – Labor Day
Fri 28 Sep 2018	Last Day to withdraw **WITHOUT** Dean's Permission
Tue 09 Oct 2018	Final Exam (for this section)
Thu 11 Oct 2018	University Holiday – Fall Break
Fri 12 Oct 2018	,Last Day to withdraw **WITH** Dean's Permission

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

Equal Access Services

If you have a documented disability or psychological/medical condition that may affect your performance in this class, please register with Equal Access Services as soon as possible so I can provide your accommodations 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-and-counseling/equal-access-services.html, or scan the QR code at right:

Equal Access Services

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.

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,

Title IX Policy

https://policy.unm.edu/university-policies/2000/2740.html or scan the QR Code at right: