CHEM 115: Preparation for Chemistry

Fall 2017 – Section 501

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Office Hours: Tue 1:00 – 2:45 pm, Wed 1:30 – 4:30 pm,
Thu 1:00 – 2:45, and anytime by appointment

Meeting Times: Mon & Wed (501) Lecture: 10:30 – 11:15 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.

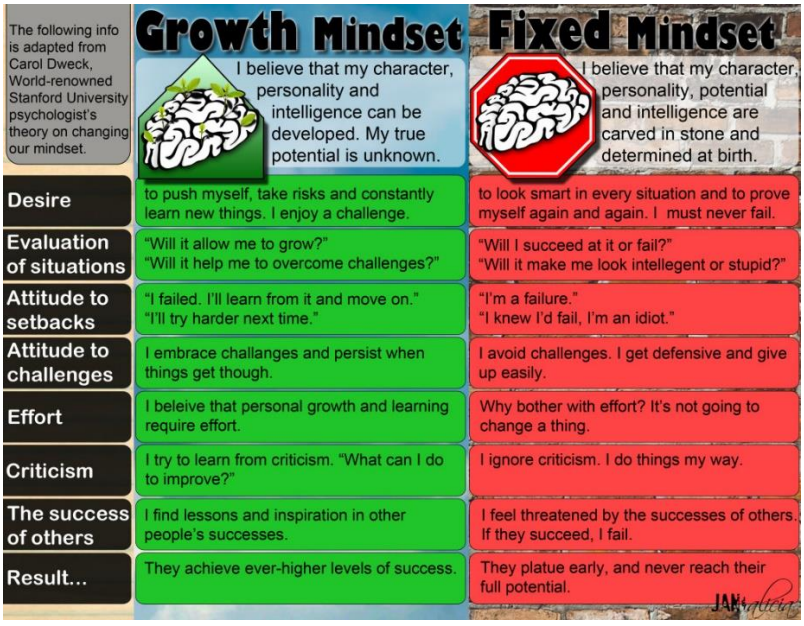
Compounds and Molecules:

- 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)

Meeting	Date	Topics	Class Activities
1	Tue 22 Aug	Course overview Study plan Scientific Notation Multiply/divide sci. not.	Simplify equations Simple calculations
2	Thu 24 Aug	Significant figures SI system & Unit Prefixes Unit conversions	BPR Quiz Unit Conversions SI system
3	Tue 29 Aug	Density Accuracy and precision of data sets	Density
4	Thu 31 Aug	Conservation of Energy Conservation of Mass Definite Proportions Multiple Proportions	Dalton's atomic theory GA
5	Tue 5 Sep	Subatomic particles Atoms, Iosotopes, Ions Periodic table	Atoms, Isotopes, and Ions GA
6	Thu 7 Sep	Ionic compounds Covalent molecules Chemical vs. physical change	Ions vs. Covalent Molecules GA Chemical vs. Physical Changes GA
7	Tue 12 Sep	Balanced chemical equations Combustion	BCE GA Combustion GA
8	Thu 14 Sep	Avogadro's Number Molar mass	Chemical conversion GA
9	Tue 19 Sep	Stoichiometry	Stoichiometry GA
10	Thu 21 Sep	Molarity of Solutions	Molarity GA
11	Tue 26 Sep	Precipitation and acid/base reactions	Reactions GA
12	Thu 28 Sep	Energy	Energy Conversion GA
13	Tue 3 Oct	Reaction enthalpy	Reaction Enthalpies GA
14	Thu 5 Oct	Catch up/review	
15	Tue 9 Oct	Final Exam	Ace the Final!

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 (Monday, 11 October) 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 omly 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! I

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

1 Sep 2017:	Last day to register (although if you're reading this you already are registered), ADD sections, and change credit hours
4 Sep 2017:	Labor Day Holiday
8 Sep 2017	Last Day to DROP without "W" grade and 100% tuition refund on LoboWEB, Last Day to CHANGE grade option
12 – 13 Oct 2017:	Fall Break
10 Nov 2017:	Last Day to DROP **WITHOUT** Student Services Permission
23 – 24 Nov 2017:	Thanksgiving Holiday
8 Dec 2017:	Last Day to DROP **WITH** Student Services Permission
9 Dec 2017:	Last day of instruction
11 – 16 Dec 2017	Final Exam Week
15 Dec 2017	Last day to report removal of Incomplete grade

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 http://www.unm.edu/~vcadvise/equalaccess.htm .

Academic Honesty

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, including dismissal, against any student who is found responsible for academic dishonesty. Any student who has been judged to have engaged in academic dishonesty in coursework may receive a reduced or failing grade for the work in question and/or for the course. 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 wok of other students; and misrepresenting academic or professional qualifications within or outside the University. Depending on the severity of the offense, students caught cheating may receive a zero on the assignment, be dropped from the course, or receive an 'F' in the course. Don't cheat.

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. 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 .