**CHEM 115: Preparation for Chemistry**

Fall 2017 – Section 501

**Instructor:** Dr. Jerry Godbout  
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**Phone:** 505-925-8611

**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: $\left(\frac{3m^2n^6}{6n^2}\right)^4$

**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!
<table>
<thead>
<tr>
<th>Meeting</th>
<th>Date</th>
<th>Topics</th>
<th>Class Activities</th>
</tr>
</thead>
</table>
| 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, Isotopes, 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 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)

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<thead>
<tr>
<th>Bullet Point Review Quizzes</th>
<th>30%</th>
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<tbody>
<tr>
<td>In-class Problems and Activities</td>
<td>40%</td>
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<tr>
<td>Final Exam</td>
<td>30%</td>
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75% of the total points must be earned to receive credit for CHEM 115

NOT CHEMISTRY, STILL IMPORTANT STUFF
(CAMPUS POLICIES)

Important Dates & Holidays

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