**Course Information**

Class Days: Monday, Wednesday, and Friday  
Class Times: 8-8:50 am  
Class Location: PAC 206  
Office Hours (and by appointment)  
M, W 9:00-11:00 am  
Office Hours Location: PHSC 327

**Course Overview**

By the end of the course, you should feel comfortable explaining the following statements:

- Chemical changes can be described on kinetic and thermodynamic terms.
- Energy is the driving force for chemical reactions; enthalpy and entropy both contribute to the overall energy of a chemical change.
- Dynamic equilibrium can be disturbed and will strive to return to equilibrium.
- The chemistry of acids, bases, and buffers is central in many biochemical processes.
- Bonding and structures involving metals can be approached and understood using several models.
- Atoms decompose by several radiochemical methods, some with corresponding energy emissions.
- Chemistry is at heart an experimental science; we can use experiments to probe each of the above statements.

**Course Materials**

The required materials for this course are

- access to Aleks (provided free of cost this semester with course code XDRAD-GRKDL), an artifically intelligent assessment and learning system (much more on this later in the syllabus)

**Course Assessment and Grading**

Your grade in this course will be comprised of the following items, which are described in more detail later.

- four in-class exams
- a cumulative final
- 14 laboratory experiments with associated reports and questions
- biweekly completion of Aleks objectives (23 total objectives)
- Grades will be based on the following: A, >85 %; B >70 %; C, >55 %; D, >45 %. Earning these percentages will guarantee your grade. I reserve the right to adjust the percentages downward as I see fit (for example, an 84 % might earn an A, but do not count on a curve for this course).

**Academic Honesty**

The University adheres to a strict policy regarding cheating and plagiarism. Become familiar with the policy and what academic integrity means. Any cheating or plagiarism will result in failing this class and a disciplinary review by the University. These actions may lead to probation, suspension, or expulsion.
TECHNICAL SUPPORT FOR BLACKBOARD

Student support for Blackboard is provided by ITSS, located on the first floor opposite from the library main doors.

COURSE SCHEDULE

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<thead>
<tr>
<th>Week of</th>
<th>Topic</th>
<th>Other</th>
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<tbody>
<tr>
<td>Jan 23</td>
<td>chemical kinetics</td>
<td></td>
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<tr>
<td>Jan 30</td>
<td>rate laws; chemical equilibrium</td>
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<tr>
<td>Feb 6</td>
<td>chemical equilibrium</td>
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<tr>
<td>Feb 13</td>
<td>aqueous equilibria; acids and bases</td>
<td>exam 1, Monday Feb 13</td>
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<td>Feb 20</td>
<td>applications of aqueous equilibria</td>
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<td>Feb 27</td>
<td>titrations</td>
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<td>Mar 6</td>
<td>solubility</td>
<td>exam 2, Friday Mar 10</td>
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<tr>
<td>Mar 13</td>
<td>spring break!</td>
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<tr>
<td>Mar 20</td>
<td>thermodynamics</td>
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<tr>
<td>Mar 27</td>
<td>thermodynamics; electrochemistry</td>
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<td>Apr 3</td>
<td>electrochemistry</td>
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<tr>
<td>Apr 10</td>
<td>electrochemistry; metals</td>
<td>exam 3, Monday Apr 10</td>
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<td>Apr 17</td>
<td>transition elements</td>
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<td>Apr 24</td>
<td>coordination compounds</td>
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<td>May 1</td>
<td>coordination compounds; nuclear chemistry</td>
<td>exam 4, Friday May 5</td>
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<td>May 8</td>
<td>nuclear chemistry</td>
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<td>May 15</td>
<td>final exam (comprehensive)</td>
<td>likely Friday May 19, 8am</td>
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ACCESSIBILITY

If you are a student who requires or believes you will require accommodations for this class, it is your responsibility to contact the Accessibility Resource Center at (530) 898-5959 or by stopping by SSC 170. You can also learn more about the services provided by visiting the Accessibility Resource Center website. To avoid any delay in the receipt of your accommodations, you should contact the Accessibility Resource Center as soon as possible.

ALEKS

Part of being successful in Chem 112 is making sure you have a firm foundation in Chem 111 and good retention of topics as we hurtle forward through 112. To help you be amazing at Chem 112, we will be using an adaptive learning technology called Aleks (Assessment and Learning in Knowledge Spaces). Aleks will be used in place of traditional homework programs like Mastering or Sapling. It will feel different to you because Aleks is a defined outcome (i.e., you need to master the concept of instantaneous rates) as opposed to a defined effort (i.e., you need to complete problems 1-7). As part of your mastery of each topic, Aleks will ensure that your background knowledge on each topic is complete. This may mean that the time spent on Aleks each night is quite variable. Consequently, it is important to get and stay on it; procrastination with your Aleks assignment will make you very unhappy and will not help meet your goals for success in the class. Any technical difficulties with Aleks should be resolved here; make sure to select “Higher Education | Science” in the Market drop-down menu.
EXAMS AND ASSIGNMENTS

ALEKS = 150 POINTS

There will be three components to your Aleks score. You have the opportunity to earn 50 points by showing up prepared by completing the initial assessment and the prerequisite review. 50 more points will be available by meeting the biweekly deadlines for all of the remaining objectives throughout the course of the semester. Finally, the final 50 points will be earned by completing your Aleks “pie” by May 17 (two days before your likely final date).

14 LABORATORY REPORTS @ 15 POINTS EACH = 210 POINTS

Your laboratory instructor will go into much more detail, but for each lab you will be responsible for pre-lab questions, an in-lab report, and post-lab questions. The pre-lab questions will be available on the course Blackboard site the Friday before the laboratory.

4 IN-CLASS EXAMS @ 100 POINTS = 400 POINTS

Each exam will be a mix of short answer and long answer questions. I am a big fan of partial credit, so it is in your best interest to try every problem and show all of your work. Make-up exams will only be permitted under unchangeable circumstances which are beyond your control (i.e., traveling for a University-sponsored event, participating in a wedding, etc.). If you will need to take a make-up exam, let me know a minimum of one week prior to the scheduled examination. If you talk to me less than one week before the scheduled examination, I cannot guarantee a make-up exam. If you do not schedule a make-up time and cannot attend the exam, you will receive a zero on that exam.

1 IN-CLASS FINAL @ 200 POINTS = 200 POINTS

The University does not release official final dates until later in the semester, but given past semesters it is highly likely that your cumulative final will be at 8 am on Friday, May 19th.

TOTAL POINTS= 960

SUPPLEMENTAL INSTRUCTION

We are very lucky to have some funding from the Chancellor’s Office which provides two Supplemental Instruction (SI) leaders for this class. SI sessions are held outside of class time. They are informal review sessions in which students compare notes, discuss readings, develop organizational tools, and predict test items. These sessions are designed to help integrate course content and improve chemistry study skills while working together with your peers. The sessions are facilitated by SI leaders, students who have previously done well in the course and who attend all class lectures, take notes, and act as model students. Studies within the CSU system have shown that students who regularly participate in SI sessions earn at least one letter grade higher than their peers who do not participate.

SUCCESS IN CHEM 112

This class is amazing—you get to learn so much interesting stuff! However, it can also be amazingly difficult. I exhort you to use ALL of your resources for this class—keep up with Aleks, go to the SI sessions, and come to my office hours! I am very excited about the addition of SI and Aleks this semester and I think that if you go all in for Chem 112 you’ll be happily surprised at how well you can do and how much fun you can have.