CHEM 114L:  
General Chemistry II lab  
South Dakota School of Mines and Technology  
Summer 2011  
1 Credit Hour

Contact Information:
Instructor: Joseph Marshall  
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Phone: 605-394-1890  
E-mail: Joseph.Marshall@sdsmt.edu

Office Hours: TBA and by appointment.

<table>
<thead>
<tr>
<th>Section Meeting Times</th>
<th>Chem 114 (new wing)</th>
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<tbody>
<tr>
<td>Chem 114L –M051</td>
<td>Monday, Tuesday</td>
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<td></td>
<td>2:00 PM to 4:50 PM</td>
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</tbody>
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Catalog Description: Laboratory designed to accompany CHEM 114.

Course Prerequisites: Prerequisite: Chem112L. Prerequisite or co-requisite: Chem114. Lab is designed to accompany Chem114. If you have not completed Chem114 and are currently enrolled in Chem114, dropping the lecture will require you to drop the lab as well, since Chem114 is a co- or prerequisite.

Instructional Methods: Pre-laboratory discussion and "hands-on" experiment

REQUIRED TEXT AND EQUIPMENT:
1. Prepackaged set of experiments Thomson Custom Solutions (ISBN- 10: 0-495-40783-6). A complete set consists of the following numbered experiments: 363, 504,616, 364, 365, 366, and 458 and can be found at the bookstore. Additional labs (Estimating the Calorie Content of Foods, etc.) will be provided for you.
2. Approved safety goggles, which must be worn at all times while in the laboratory. Goggles may be purchased in the bookstore. Your goggles may be kept in your lab drawer.
3. Lab Notebook. A hardbound notebook should be purchased for use as a lab notebook. You will be informed of how and when to start using this notebook.
5. Computer or Tablet. You should have access to a tablet or computer to complete assignments for the class. This may be outside of lab.
COURSE POLICIES:

Attendance: Attendance at pre lab lectures and labs is mandatory.

Assessments/Grading: Final grades are determined based on the total points earned out of the 1000 total points in the course.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Points</th>
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<tbody>
<tr>
<td>Lab Reports (7 labs)</td>
<td>700 pts</td>
</tr>
<tr>
<td>Unknown Labs (3 labs)</td>
<td>150 pts</td>
</tr>
<tr>
<td>Expt 363</td>
<td>10 pts</td>
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<tr>
<td>Unknown Report</td>
<td>90 pts</td>
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<tr>
<td>Discretionary</td>
<td>50 pts</td>
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<tr>
<td><strong>Total Pts:</strong></td>
<td><strong>1000 pts</strong></td>
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Once your cumulative total has been calculated, grades are assigned according to the following scale:

A: 90%  
B: 80%  
C: 70%  
D: 60%  
F: <60%

These levels may change, but they will not increase.

Lab Reports: Each lab report is graded on a 100-point basis, except for Expt 363 which is worth a total of 10 points. The unknown lab scores break down as 20 points for the correct identification of the cations present and 30 points for the lab book for that lab.

Some points to help with your reports/post labs:

- Be clear, concise and to the point when writing pre or post lab reports. Often a couple words will suffice; long drawn out explanations can lose more points than short concise answers.
- Long conclusions are often unnecessary, and can lose points for not being concise.
- Show your calculations and formulas used when you have to give a value. **Credit may not be given for answers without clear indication of how they were arrived at.**
- Chemical equations are often a really good way to help answer question, so you should include a supporting equation when needed. This will be expected for many problems.
- Double check and make sure to answer all questions, and answer what the question asks.
- As you are performing an experiment make sure you are aware not only of what you are doing but why. This will help keep you from getting off track during the course of an experiment and also make you aware of possible errors.

Pre-labs: Read each lab and have the pre-lab completed prior to class. All pre-labs are due **before you can enter your lab session.** Nobody will be allowed to do the lab without completion of the pre-lab. You will receive a score of zero for a lab you miss for not having the pre-lab done.

Post-labs: Post labs are due **at the end of the lab period** unless otherwise noted. Any late submissions will not be graded. Turn them in before you leave.

Discretionary Points: There will also be 50 discretionary points in the final grade. These points are given to you at the beginning of the semester, but can be lost for a variety of reasons. For example, but not limited to: failure to obey laboratory safety rules, poor lab practice, tardiness, improper disposal of waste, and behavior that is distracting and unprofessional in the lab.

*If the instructor deems you have not prepared yourself properly for the lab you are about to do, they may ask you to leave and you will receive no credit for that week’s lab.*
Final Unknown Report: At the conclusion of each of the Qualitative Analysis labs (ANAL 364-366) you will have to identify an unknown. This will be an individual project for which you will be given one lab period. You will be using your results from the previous work in your lab book and the handouts to come to this conclusion. You may work with your lab partner, but you will have a different unknown so you will have your own conclusions. You may not work with others in the lab besides your lab partner. After this project is completed you will need to prepare a short report (1-3 pages) on your results. You will then need to submit your lab book and a hard copy of your short report at the end of the course, 7/29/11. Further details will be given before the start of the unknown labs.

Reports or lab books handed in a day late will lose half the possible points. Any reports or lab books handed in more than a day late will not be graded. Details on the grading of the report/lab books will be provided before the start of the project, but the total points will be 90 points.

Missed Labs/Make Up Policy: Students who have a legitimate reason for missing a lab (death in the immediate family, participation in a school-sponsored activity, jury duty, or military obligations) must discuss the reason for the absence, in person, with the lab instructor to see if an excused absence will be granted. An excused absence will be granted for only one missed lab: all other missed labs receive scores of zero, regardless of the reason for missing the lab.

Lab space is limited and you should not assume that you can attend another lab section other than the one in which you are officially registered. For those that have an excused absence, as determined by the instructor, a makeup lab will be given at the end of the semester. You will be given instructions on the makeup lab as needed. The grade given on the makeup lab will replace the zero for the lab absence.

If a student misses the known part of one of the 3 qualitative, they will miss the 100 points for that part of the lab. If they miss the unknown part, they will miss the 50 points from that part of the lab. These can be made up in accordance with the policy outlined here. Missing EITHER the known or the unknown will count as an absence. Missing both will count as TWO absences.

Missing 3 labs will likely result in a failing grade for this course. There are only 10 lab meetings, each lab missed is about one letter grade worth of your final grade. Poor attendance will result in low grades.

Lab Drawers and Partners: All labs will be done with partners. At the beginning of lab you will be assigned a partner who you will work with throughout the duration of the lab.

*If you are having problems with your lab partner that are affecting your performance, please see your instructor.*

Course Outcomes:
- Perform procedures for the analytical separation and qualitative determination of selected cations in an aqueous solution.
- Understand the fundamental and operational principles upon which common methods of separation and purification of chemical substances are based.
- Identify sources of error in chemical experiments.
- Interpret experimental results and draw reasonable conclusions.
- Practice laboratory safety procedures.
- Anticipate, recognize, and respond to hazards of chemical materials and manipulations.
- Learn the importance of following correct laboratory procedures.
- Keep legible and complete experimental records.
- Collaborate with peers in obtaining and interpreting data.
Course Objective: Students will gain familiarity with the principles and techniques of inorganic qualitative analysis, chemical kinetics, and the synthesis of selected chemical compounds.

ADDITIONAL LABORATORY RULES
- Admittance to the laboratory will be denied if a student does not have department-approved safety goggles.
- Students wearing improper or incomplete attire will be asked to leave the laboratory. They may be permitted to return when items in safety violation are replaced with acceptable clothing. Students sent for proper clothing will receive a grade penalty for the lab they miss.
- An unauthorized experiment at any time will result in the immediate assignment of a final grade of “F” for the course.
- Dispose of laboratory materials in proper waste bottles that are located in the hood(s). Note labels on waste bottles. If you have any doubt about where to dispose of something, ask your instructor for assistance.
- Any student exhibiting habitual disregard for any safety policy will be asked to leave the laboratory.
- Laboratory drawer replacement items are free-of-charge only on the first scheduled meeting. After the initial check-out day, you will be responsible for the replacement of broken or missing items. This includes, but is not limited to, items that are lost due to your failure to return them to your drawer or your failure to lock your drawer. Replacement items are to be paid for at the time of their acquisition.
- Unexpected events (emergencies, spills, accidents, etc.) must be brought to the immediate attention of your instructor. Do not leave the lab without informing the instructor of the event.
- The use of tablet/laptop PCs in the lab is prohibited. You may store them out of harm’s way during the lab, but you may not use them in the lab. Use of them outside of the lab is encouraged. Limited coat rack space is available in the lab room.
- Students must vacate the lab by the designated end of the lab time. Students who want to work past this time will not be allowed to do so because of safety and scheduling issues. There IS a lab after your lab.

Tentative Schedule: (subject to change)

<table>
<thead>
<tr>
<th>Meeting</th>
<th>Assignment/Experiment</th>
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<tbody>
<tr>
<td>6/20</td>
<td>Check in, Safety Video, Expt. 363: Laboratory Techniques.</td>
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<tr>
<td>6/21</td>
<td>Calorimetric Analysis of food*.</td>
</tr>
<tr>
<td>6/27</td>
<td>Iodine Clock*.</td>
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<tr>
<td>7/04</td>
<td>4th of July</td>
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<tr>
<td>7/05</td>
<td>Expt. 364: Cation Analysis: Group Separations and Analysis of Group I Cations (no Hg²⁺).</td>
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<tr>
<td>7/12</td>
<td>Expt. 365: Qualitative Analysis of Group II Cations.</td>
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<tr>
<td>7/18</td>
<td>Expt. 365: Analysis of Group II Cations Unknown.</td>
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<tr>
<td>7/19</td>
<td>Expt. 366: Qualitative Analysis of Group III and IV Cations.</td>
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<tr>
<td>7/26</td>
<td>Experiment: Electrochemical Cells*. Check Out.</td>
</tr>
<tr>
<td>[7/29]</td>
<td>Lab books, Unknown Report DUE by NOON on Friday 7/29/11</td>
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*labs will be handed out, not included in the manual.*
**Fine for Failing to Check in at the End of the Semester:** All students who have checked out a lab equipment drawer and lock are required to check the drawer and lock back in at the end of the semester or earlier if withdrawing from the course, and to replace missing or broken items. A fine of $30.00 is assessed for failure to check in and a fine of $30.00 is assessed if you lose your lock or fail to turn it in upon check-in. If circumstances force you to withdraw from the lab before the end of the semester, you should make arrangements with the Chemistry Lab Manager (Margaret Smallbrock, C 123) to check in your equipment drawer and lock to avoid the fines.

**Cheating and plagiarism policy:** Any cheating as defined by the student code of conduct is not tolerated in this course. See [http://sdmines.sdsmt.edu/sdsmt/studentconduct/main](http://sdmines.sdsmt.edu/sdsmt/studentconduct/main) regarding the student code of conduct. Cases of cheating will be handled on a case to case basis as defined in the student code of conduct. Please note that according to “Policy Governing Academic Integrity” in the SDSM& T Undergraduate Catalog, the instructor of record for this course has discretion of how acts of academic dishonesty are penalized, subject to the appeal process, and that "Penalties may range from requiring the student to repeat the work in question to failure in the course.". (72-73).

**Electronic Devices Policy:** Please turn off your cell phone before your section starts. No text messaging in class. No headphones. No other use of any other electronic/computer media is allowed in the laboratory.

**ADA Statement:** Students with special needs or requiring special accommodations should contact the instructor (Joseph Marshall, 394-1890) and/or the campus ADA coordinator, Jolie McCoy, at 394-1924 at the earliest opportunity.

**Freedom in learning:** Students are responsible for learning the content of any course of study in which they are enrolled. Under Board of Regents and University policy, student academic performance shall be evaluated solely on an academic basis and students should be free to take reasoned exception to the data or views offered in any course of study. Students who believe that an academic evaluation is unrelated to academic standards but is related instead to judgment of their personal opinion or conduct should contact the dean of the college which offers the class to initiate a review of the evaluation.

Syllabus is subject to change