CHEM 114L: General Chemistry II Lab  
South Dakota School of Mines and Technology  
Chemistry/Chemistry Engineering Building, Room C228 (Prelab), Room C207/C204 (Lab)  
Section 1 (051): T 8:00-10:50 pm (C207)  
Section 2 (052): Th 8:00-10:50 pm (C207)  
Section 3 (053): Th 8:00-10:50 pm (C204)  

(Subject to modification)  
Coordinator: Justin P. Meyer  
Office: Chemistry and Chemical Engineering 122  
Phone: 394-2431  
Email: Justin.Meyer@sdsmt.edu  
Office Hours: Monday, Wednesday, Friday: 9:00 – 11:00 am.  

TA (Sections 1 and 2): Khang Vo  
Khang.Vo@hardrockers.sdsmt.edu  
TA Office Hours: Monday 3:00-4:00 pm C213A  

TA (Section 3): Nandy Ravikanti  
Navoday.Ravikanti@Hardrockers.sdsmt.edu  
TA Office Hours: Monday 2:00 – 3:00 pm C213A  

Course Prerequisites: Prerequisite: Chem. 112L. Prerequisite or corequisite: Chem. 114. Lab is designed to accompany Chem. 114.  

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/ make up lab) 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 or at the first and second lab meetings. Your goggles may be kept in the lab locker assigned to your group.  
3. **Roll of paper towels**, A roll of paper towels should be purchased by you and kept in the lab locker assigned to you. Any budget brand will do.  
4. **Scientific Calculator**
### EXPERIMENT/ASSIGNMENT SCHEDULE

<table>
<thead>
<tr>
<th>Meeting Days</th>
<th>Assignment/Experiment</th>
</tr>
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<tbody>
<tr>
<td>Jan. 16\textsuperscript{th}, 18\textsuperscript{th}</td>
<td>No Lab</td>
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<tr>
<td>Jan. 23\textsuperscript{rd}, 25\textsuperscript{th}</td>
<td>Safety Video (C 228). Drawer check-out. Expt. 363: Laboratory Techniques (Read and complete Prelab)</td>
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<tr>
<td>Jan 30\textsuperscript{th}, Feb. 2\textsuperscript{nd}</td>
<td>Expt. 504: Determining the Rate Law for the Crystal Violet-Hydroxide Ion Reaction.</td>
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<tr>
<td>Feb. 6\textsuperscript{th}, 8\textsuperscript{th}</td>
<td>Expt. 616: Introducing Chemical Equilibrium</td>
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<tr>
<td>Feb. 13\textsuperscript{rd}, 15\textsuperscript{th}</td>
<td>Expt. 364: Cation Analysis: Group Separations and Analysis of Group I Cations (omit Hg\textsubscript{2}\textsuperscript{2+})</td>
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<tr>
<td>Feb. 20\textsuperscript{th}, 22\textsuperscript{nd}</td>
<td>Expt. 364: Analysis of Group I Unknown.</td>
</tr>
<tr>
<td>Feb. 27\textsuperscript{th}, Mar. 1\textsuperscript{st}</td>
<td>Midterm Exam, Experiment: Estimating the Calorie Content of Foods</td>
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<tr>
<td>March 6\textsuperscript{th}, 8\textsuperscript{th}</td>
<td>Spring Break No Lab</td>
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<tr>
<td>March 13\textsuperscript{th}, 15\textsuperscript{th}</td>
<td>Expt. 365: Qualitative Analysis of Group II Cations.</td>
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<tr>
<td>March 20\textsuperscript{th}, 22\textsuperscript{nd}</td>
<td>Expt. 365: Analysis of Group II Cations Unknown.</td>
</tr>
<tr>
<td>March 27\textsuperscript{th}, 29\textsuperscript{th}</td>
<td>Expt. 366: Qualitative Analysis of Groups III and IV Cations.</td>
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<tr>
<td>April 3\textsuperscript{rd}, 5\textsuperscript{th}</td>
<td>Expt. 366: Qualitative Analysis of Groups III and IV Cations Unknown.</td>
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<tr>
<td>April 10\textsuperscript{th}, 12\textsuperscript{th}</td>
<td>Expt. 458: Balancing Oxidation-Reduction Equations by the Ion-Electron Method.</td>
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<tr>
<td>April 17\textsuperscript{th}, 19\textsuperscript{th}</td>
<td>Final Exam, Drawer check-in</td>
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<tr>
<td>April 24\textsuperscript{th}, 26\textsuperscript{th}</td>
<td>Make up Lab</td>
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<tr>
<td>May 1\textsuperscript{st}, 3\textsuperscript{rd}</td>
<td>No Lab</td>
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### COURSE POLICIES:

**Attendance:** Attendance at lectures is mandatory.

**I. Assessments/Grading:** Final grades are determined based on the total points earned out of the 1000 possible in the course. There will be two exams, a midterm worth 100 points and a final worth 150 points.

Each lab report is graded on a 100-point basis and all lab reports are due at the end of the lab period unless otherwise announced. Among the criteria used in grading the reports are: proper use of significant figures, neatness, accuracy and precision of results, and answers to the pre- and post-lab questions, if any. Read each experiment carefully and complete the pre-lab questions **before** coming to lab; lab time is limited and advanced preparation is essential if you are to complete the experiment and the report before the end of the period. **Answers to the pre-lab questions are due at the beginning of the period in which the experiment is done.**

There will also be 50 discretionary points. 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, improper disposal of waste, and behavior that is distracting and unprofessional in the lab. *If the lab TA or coordinator deems you have not prepared yourself properly for the lab you are about to partake in, they may ask you to leave and given no credit for that week’s lab.*

Once your cumulative total has been calculated, grades are assigned according to the following scale:

- A: 90%  
- B: 82%  
- C: 74%  
- D: 66%  
- F: <66%

*These levels may change, but they will not increase.

**II. Missed Labs:** 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 coordinator (Dr. Meyer, not your lab TA) 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 it is not permissible to attend another lab section other than the one in which you are officially registered. The last week of lab a makeup lab will be given for all students that missed lab for an excused reason (as determined by Dr. Meyer). The grade given on the makeup lab will replace the zero for the lab absence. If a student missed ½ of a two-part lab they will lose 50 points from that lab. You will still need to hand in the report for that lab. It needs to be as complete as possible (may use your lab partner for help). Those 50 points lost from this type of absence can be made up in the makeup lab if the absence is deemed excusable.

III. Fine for Failing to Check-in or Return Key: All students who have checked out a lab locker and drawer key are required to check the locker and key in at the end of the semester or earlier if withdrawing from the course. A fine of $30.00 is assessed for failure to check-in and a fine of $100.00 is assessed if you lose your key 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 storeroom manager (Kris Grinnell, C 101) to check in your desk and key in order to avoid the fines.

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 and will not be permitted to return until items in safety violation are replaced with acceptable clothing.
- 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 TA. Do not leave the lab without informing your TA of the event.
- The use of tablet/laptop PCs in the lab will be prohibited. You may store them out of harms way during the lab, but you may not use them in the lab.

Withdrawal Deadline: The last day to drop this class with a grade of “W” recorded on your transcript is April 10th.

Course Objective: Students will gain familiarity with the principles and techniques of inorganic qualitative analysis, chemical kinetics, and the synthesis of selected chemical compounds.
Course Outcomes:

- Perform procedures for the analytical separation and qualitative determination of selected anions and 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.
ADA Statement:  Students with special needs or requiring special accommodations should contact the instructor, (Justin Meyer, at 394-2431) 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.