

CHEM 114L: General Chemistry II Lab

SPRING 2010

South Dakota School of Mines and Technology

Chemistry/Chemistry Engineering Building Room C207,C301 (Lab)

Section 1 (051): T 8:00-10:50 am (C207)

Section 2 (052): Th 8:00-10:50 am (C207)

Section 3 (053): Th 1:00-3:50 pm (C207)

Section 4 (054): Th 8:00-10:50 am (C301)

(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 - 10:30 am.

TA (Section 1-3):

Carine Wamkam

Carine.tchamakamwamkam@mines.sdsmt.edu

TA Office Hours:

by appointment

TA (Section 4):

Mark Miller

Mark.miller@mines.sdsmt.edu

TA Office Hours:

by appointment

Course Prerequisites: Prerequisite: Chem. 112L. Prerequisite or corequisite: Chem. 114. Lab is designed to accompany Chem. 114. *If you have not completed Chem 114 and are currently enrolled in Chem 114, dropping of the lecture will require you to drop the lab as well as Chem 114 is a co- or prerequisite!*

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, Red Cabbage as a pH indicator, etc.) will be provided for you.
2. **Prelab and Post lab questions** are available for some experiments on D2L.
3. **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.
4. **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. **Scientific Calculator**
6. **Computer or Tablet.** You should have access to a tablet or computer to complete assignments for the class. This may be outside of lab.

EXPERIMENT/ASSIGNMENT SCHEDULE

Meeting Days	Assignment/Experiment
Jan. 19 th , 21 st	No lab on first week of class
Jan. 26 th , 28 th	Safety Video (shown in C228). Lab drawer check-out. Expt. 363: Laboratory Techniques (Read and complete Prelab on D2L)
Feb. 2 nd , 4 th	Expt. 504: Determining the Rate Law for Crystal Violet
Feb. 9 th , 11 th	Expt. 616: Introducing Chemical Equilibrium
Feb. 16 th , 18 th	Expt. 364: Cation Analysis: Group Separations and Analysis of Group I Cations (omit Hg ₂ ²⁺)
Feb. 23 rd , 25 th	Expt. 364: Analysis of Group I Unknown.
March 2 nd , 4 th	Midterm Exam (Monday, 1st) Experiment: Estimating the Calorie Content of Foods.
March 9 th , 11 th	No Lab, Spring Break
March 16 th , 18 th	Expt. 365: Qualitative Analysis of Group II Cations.
March 23 rd , 25 th	Expt. 365: Analysis of Group II Cations Unknown.
Mar. 30 th , Apr. 1 st	Expt. 366: Qualitative Analysis of Groups III and IV Cations.
Apr. 6 th , 8 th	Expt. 366: Qualitative Analysis of Groups III and IV Cations Unknown.
Apr. 13 th , 15 th	Experiment: Using Red Cabbage as a pH Indicator. *Lab Books Due*
Apr. 20 th , 22 nd	Experiment: Electrochemical Cells
Apr. 27 th , 29 th	Final Exam (Monday, 26th) Drawer check-in *Make up labs are due*
May 4 th , 6 th	No Lab, Finals Week

COURSE POLICIES:

Attendance: Attendance at lectures and labs is mandatory.

I. Assessments/Grading: Final grades are determined based on the total points earned out of the 1100 possible in the course. There will be two exams, a midterm worth 90 points and a final worth 150 points.

Lab Reports (8 labs)	800 pts
Lab Books	100 pts
Expt 363	10 pts
Exams	240 pts
<u>Discretionary</u>	<u>50 pts</u>
Total Pts:	1200 pts

Lab Reports: Each lab report is graded on a 100-point basis and all lab reports are to be posted to D2L within 48 hours from the end of the lab (Expt 363 is worth a total of 10 points).

Some points to help with your reports:

- 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.
- Show your calculations and formulas used when you have to give a value. This can be done with your tablet pen in word or other methods as you desire.
- Chemical equations are often a really good way to help explain a question, so you should look to include a supporting equation when needed. This will be expected for many problems.
- Double check and make sure to answer all questions. The questions provided on D2L will be slightly different than those in your set of lab experiments.
- As you are performing an experiment make sure you are aware not only of what you are doing but why. There will be a set of experiments in which you are doing tests, and it is important to realize why you are doing these and not just following the directions. This will help keep you

from getting off track during the course of an experiment and also make you aware of possible errors.

D2L: The course management site is through D2L. On there is a wealth of information. Make sure to review the material there. Pre-lab and post-lab questions are posted there in a Microsoft word format. All pre-labs and post-labs are to be completed using the word documents provided and submitted on D2L by the due dates and times. D2L does work, and failed submissions are not the fault of your TA or instructor. Make sure you get confirmation (email) when you submit your assignments or check back to make sure you have a submission registered. Any assignment not available to your TA by the due date will be considered as a zero as late submissions will not be accepted.

Pre-labs: Read each lab and have the pre-lab completed prior to class. All pre-labs are due **before your lab session** and should be uploaded to D2L prior to the start of your lab session. If for any reason the pre-lab could not be uploaded, bring a hard copy of your completed pre-lab as nobody will be allowed to do the lab without completion of the pre-lab.

Post-labs: Post labs are due **48 hours after the end of the lab period** unless otherwise noted. Any late submissions will not be graded. Students who cannot submit a post lab report on time due to other school activities should see the TA before leaving the lab to agree on a due date. This will be done on a case by case basis.

Lab Notebook: Your lab book is worth 100 points. They are to be handed in the week of April 13th during your scheduled lab period. Details on what to include in your lab book will be given prior to their use (more information can be found on D2L). You will start to use them on the week of February 16th, so make sure you have one purchased one by then. The notebook itself should be a hardbound book, a composition book works fine. It is your preference if you want a line ruled or grid format.

Discretionary Points: 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, poor lab practice, tardiness, 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 give no credit for that week's lab.**

Exams: You will be given two exams, a midterm and a final. These will test to make sure you understand the basic concepts and can duplicate the calculations from lab if you are given proper data. The midterm will be worth 90 points and the final will be worth 150 points. These exams will be in C228 during the common exam hours (4:00 pm) on Monday March 1st (midterm) and Monday April 26th (Final). Labs for those weeks will be shortened to accommodate for the time used for the exams.

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.

Reclamations: All grades will be posted on D2L and students will have **1 week after the date they were posted** for any complaints and comments on their grade. After that date, any complaints and comments will not affect your grade.

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 should not be assumed 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 Dr. Meyer, a makeup lab will be given which will be due by the end of lab on the last week of lab. 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 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.

If more than two labs are missed for any reason, a student will receive a failing grade for the course. In order to fully achieve the outcomes of this course you have to be present in the lab.

III. 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. You and your lab partner will share a lab drawer. You will receive one key that you will leave on the board in the lab (will be pointed out in the lab). The cost of replacement of any damaged, broken, or lost items in the drawer will be split between you and your lab partner unless other arrangements are made. If you miss lab and your partner breaks something, you are still responsible for the cost involved in replacement.

If you are having problems with your lab partner that are affecting your performance, please see your instructor (Dr. Meyer), not your TA.

IV. 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 Chemistry Lab Manager (Margaret Smallbrock, C 123) 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. Use of them outside of the lab is encouraged.
- 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.

Withdrawal Deadline: The last day to drop this class with a grade of “W” recorded on your transcript is April 7th.

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.*