CHEM 1152-01: Principles of Chemistry 2

Fall 2014

Lecture: Tuesdays and Thursdays 9:05-11:00 am in S.2400

Instructor: Dr. Jasmine Erbs

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Email: Jasmine.Erbs@minneapolis.edu
Phone: 612-659-6035

Office Hours: Mondays 11:00 am-1:00 pm, Tuesdays 11:00 am-noon and 1:30-3:30 pm or by appointment

Week 1 Quick Start:
Here’s what you must do the first week of class. Details are available in this syllabus below.
- Read over this syllabus and mark your calendars with important exam dates
- Purchase the textbook and access code to Mastering Chemistry
  - Course ID: ERBS1152F14
  - You MUST select the textbook Tro, Principles of Chemistry: A Molecular Approach, 2e when setting up your account.
  - Do NOT select Chemistry: A Molecular Approach
  - Begin working Chapter 12 problems
- Visit the course D2L website

Course Description
The Chem 1152 course is the second part of a two semester sequence designed to give students a broad introduction to the field of chemistry. It involves both lecture and required laboratory sessions. Students are expected to be knowledgeable in the topics covered by Chem 1151, Chem 1020 or their equivalents (see additional prerequisites below). The pace WILL be fast and challenging.

Warning
Principles of Chemistry 2 might be the most difficult course you’ve taken so far in your college career. New terminology, abstract concepts, and mathematical problem solving all contribute to a demanding course that requires a lot of time spent studying and working problems. Lecture sessions will provide you with a structured presentation of ideas to draw on readings, study videos, problems, lab, and in-class activities to develop an understanding of course topics.

Textbooks and Materials
- Scientific Calculator with log/ln and EE/EXP (PDA’s, cell phones and laptop computers will not be permitted during exams)
- Full coverage goggles (available for purchase in the college bookstore)
- Laboratory handouts are available on the Chemistry Student Resources page.

Prerequisites
You need to have successfully completed Chem 1151, Chem 1020, Math 0080, Read 0200 and English 0900 or the equivalent of these courses with good grades. More math is better. It is your responsibility to have met the course prerequisites at the beginning of the semester.

Course Goals and Objectives
- Students will develop their knowledge of chemistry to understand a variety of scientific problems. Students will learn skills to explain the basic concepts involved within questions and problems, complete calculations, or determine solutions to solve problems.
- Students will work cooperatively within pairs or groups to develop their problem solving skills and their understanding of course topics.
- Students will use equations, conversion factors, and scientific notation to find numeric answers.
Student Responsibilities
- Read the entire syllabus carefully: You are responsible for understanding information included.
- The importance of class attendance and participation cannot be overemphasized! It is expected that every student is on time and present for each lecture and laboratory session. Therefore, YOU ARE RESPONSIBLE for all announcements and material presented in class, whether or not the topic is in your text.
- It is YOUR RESPONSIBILITY to check D2L and obtain missed lecture notes, handouts, and announcements—including schedule or homework changes. If you miss a lecture, talk with a fellow student for updates and topics covered.

Student Role
As a student enrolled in this class, I expect you to prepare for lecture topics by reading and completing problems, to actively attend class, and to attentively complete assignments on time. Learning about chemistry and science requires a commitment to complete assigned reading, work through study problems, and apply your understanding during labs and exams.

In fact, science is the body of knowledge we have to understand how the physical world works, by observation and experimentation. So your role as a student and a scientist this semester is to explore what we understand about chemical processes to make observations, conduct experiments, and solve problems during lecture and lab activities. You’ll become more confident in your knowledge and problem solving skills with practice in using them – and not just to complete calculations!

Instructor Role
My role as your instructor is to provide the best learning environment possible during our scheduled class lectures and improve your study skills for successful learning outside of the classroom. I intend to provide a supportive, interactive, and productive atmosphere to improve your learning in class. Periodically, I will ask for your reaction to the classroom atmosphere and class activities, and I will consider your feedback for planning future class sessions.

Grades and Grading Policy
Your overall score will be based on the distribution:

<table>
<thead>
<tr>
<th></th>
<th>Percentage</th>
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<tbody>
<tr>
<td>4 Midterm Exams</td>
<td>46%</td>
</tr>
<tr>
<td>Final Exam (Cumulative)</td>
<td>15%</td>
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<tr>
<td>Homework</td>
<td>10%</td>
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<tr>
<td>Problem Sets, Quizzes,</td>
<td>9%</td>
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<tr>
<td>and Attendance</td>
<td></td>
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<tr>
<td>Laboratory</td>
<td>20%</td>
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Letter grades will be assigned strictly as follows:
- A ≥ 90.0%
- B ≥ 80.0%
- C ≥ 70.0%
- D ≥ 60.0%
- F < 60.0%

I reserve the right to lower the above scheme.

Midterm Exams
- All exams will consist of questions involving multiple choice questions and work problems. The date and coverage for each exam are given in the attached semester schedule. All exams will be given at the scheduled times and it is not possible to make up an exam once it has been administered to the entire class.
- Each midterm exam is worth 11.5% of the course grade, so the combined contribution of midterms will be 46% of the course grade.
- In case of foreseeable occasions, such as job training, family events, hospitalization, or religious holidays, etc., an early exam can be arranged and administered in the Testing Center (T.2800). Talk to the instructor as early as possible to make the arrangement.
Final Exam
- Everyone must take the cumulative final exam. If you miss the final exam, you will be given a zero for that exam unless you request an “incomplete” before the final.
- The Final Exam has an extended time, 9:00-11:00 am on Thursday, December 18.

Homework
- For your benefit, homework assignments will be due over the course of the term. Homework will be administered via Mastering Chemistry website. (www.masteringchemistry.com)
- If you paid for Mastering Chemistry previously, you should not have to pay again. Subscriptions are typically 2 years in length.
- You must register on the Mastering Chemistry website during the first week of class; bundled with the textbook or sold separately for $66. Authorizations may be purchased using your credit card at the Mastering Chemistry website or separately at the college bookstore.
- Course title: Principles of Chemistry 2: Fall 2014 Course ID: ERBS1152F14
- Enrollment closes after the 3rd week. You must enroll in Mastering Chemistry before that time.
- There isn’t a time limit for the assignments, but they must be completed before they expire.
- The problems will be similar to those that you’ll see on problem sets and exams. Homework will be the first opportunity for you to check your understanding of the chapter topics and focus on learning things that give you difficulty.

Problem Sets, Quizzes, and Attendance
- For your benefit, four problem sets will be assigned and completed during class time throughout the semester (one for each midterm exam). Students are expected to be prepared to contribute and work cooperatively within a small group (2-4 students) to complete the assignment.
- The problem sets are designed to help you learn from and teach fellow students in order to improve your problem solving skills. These are considered a very important activity to improve your learning. You will be more successful at completing the questions during these activities with preparation before class and good communication amongst group members.
- Quizzes will be announced at least one class period prior and will administered during class for the instructor and student to assess mastery of concepts and problem solving skills.
- A portion of your grade will be based on your attendance and participation, which are important to improve your learning in the course. I understand that you may not be able to attend every lecture session but do your best attend class and be prepared.

Extra Credit
There are no planned extra credit points for this course. Extra credit options will not be provided to make up for prior poor performance or missed assignments/exams. If there are extra-credit options, they will be announced to the entire class and will occur prior to the end of the course.

Eligibility for Grade Incomplete
- The student must have a compelling and documentable reason for not being able to take the final exam within the term dates.
- The student needs to be in passing status at the time of the agreement and must be able to do the work required to complete the course without direct instruction.

Any incomplete must be made up before the first week of the following semester. Otherwise the grade of “Incomplete” is automatically converted to an “F” at the end of the eighth week of the following semester. The instructor is under no obligation to agree to an incomplete and will not do so if the above guidelines are not satisfied.
Course Policies
All MCTC policies and procedures are firmly enforced in this course. Students are responsible for knowing and obeying the Student Code of Conduct as established by MCTC (2011-2012 College Catalog). Any kind of violation will be reported on the Student Misconduct Form and appropriate sanction will be imposed following the guidelines.

- Civil and respectful classroom behavior is expected at all times. Turn off cell phones, iPods, or other electronic devices before lecture, an exam, or lab.

- If you decide to stop attending courses, you should immediately drop/withdraw from the course. If you do not show up for the first week of class or stop attending for more than 2 weeks, you will be administratively withdrawn from the course. You will remain responsible for any financial liability and any academic consequences due to this administrative withdrawal.

- Academic dishonesty, including but not limited to plagiarism and cheating, is absolutely prohibited in any portion of the academic work. In addition to the report on the Student Misconduct Form, the first-time violation will result in a zero for that assignment and a grade of “F” for the entire course for the second-time violation. Note: Usage of cell phones, iPods, laptops, or any other electronic device for any reason during exams will be considered cheating which will be subject to disciplinary actions stated above.

D2L
Desire2Learn (D2L) is a password-protected, online classroom management system. The instructor will post announcements, handouts, grades, etc. in the system. Check it regularly
- Go to MCTC homepage: www.minneapolis.edu and click on D2L under Current Students tab.
- You must use your StarID to log in.
- You will see a list of courses you are taking this semester. Click on the course you are interested in exploring.
- Under the Assessments tab, click on Grades to access your graded lecture materials.
- The Learning Center offers several hands-on orientations for students to get help with D2L and student e-mail in room T.4900 (see the D2L “My Home” page for details).

Accommodations for Students with Disabilities
If you need appropriate accommodation due to disability to succeed in lecture and/or laboratory, please contact the Office for Students with Disabilities: 612-659-6730 or 612-659-6731 (TTY), T.2400. Only the recommendations made by that office will be accommodated.

Religious Accommodations
Minneapolis Community and Technical College is committed to respecting the religious beliefs and practices of all members of the community and making accommodations for observances of special significance to adherents. Students’ sincerely held religious beliefs shall be reasonably accommodated with respect to scheduling and other academic requirements for this course. Students requesting academic accommodations for Spring Semester due to religious beliefs must notify the instructor of such requests in writing or by email by 5:00 pm on Friday, January 17th.

Diversity and Collegiality
Each student within our classroom holds different strengths and skills from his or her personal, educational, and professional experiences. Each person has unique perspectives on how to understand and apply the course topics to experiences outside of the classroom. The lecture format and in-class activities will be designed to accommodate students with different learning styles and educational backgrounds. While working with classmates, be aware that other students may interpret and solve problems differently than you. This does not mean that the other student is wrong. In fact, it provides you with the opportunity to learn new ways to think about or solve questions, and can improve your understanding of the concepts involved.
Laboratory

Lab Meeting Times:

- **Wednesday** (Section 30) Boraas 9:45 am – 12:15 pm
- **Wednesday** (Section 31) Boraas 2:30 pm – 5:00 pm
- **Thursday** (Section 32) Boraas 11:15 am – 1:45 pm
- **Thursday** (Section 41) Boraas 5:30 pm – 8:00 pm

Required Materials

- Bound Laboratory Notebook
- **Full coverage goggles** (available for purchase in the college bookstore)
- Scientific Calculator with log/ln and EE/EXP
- Laboratory handouts are available on the Chemistry Student Resources page. [http://www.mctcteach.org/chemistry/C1152/index.htm](http://www.mctcteach.org/chemistry/C1152/index.htm)

Laboratory Handouts

Laboratory handouts for each experiment are available on the Chemistry Department website in Adobe Acrobat file format ([http://www.mctcteach.org/chemistry/C1152/](http://www.mctcteach.org/chemistry/C1152/)). Download, print, and study the handout in advance of coming to lab.

Grading

- Not performing more than 3 experiments (for whatever reason) will result in you being dropped from the class.
- Lab reports (10 points each) are due at the beginning of the next laboratory session. 1 point/day is deducted for reports turned in late (Maximum 5 points)
- Lab quizzes (10 pts each)
  - Quizzes are administered during the first 15 minutes of the laboratory class.
  - There is no additional time for students arriving late.
  - **Students more than 10 minutes late for lab will not be permitted to take the quiz or perform the experiment. (Zero’s for both the report and quiz will be entered in the grade book).**
  - Quizzes will be based upon foundational material, the day’s laboratory procedures and safety protocol.
  - Quizzes will be corrected immediately. Individuals not passing with a score of 6/10 on the quiz will not be allowed to perform the experiment and will receive a zero for the experimental report.
- The lowest laboratory quiz and report will be dropped before final grades are calculated.
- The laboratory constitutes 20% of the overall course grade.

Missed Labs

- Missed labs cannot be made up.
- For legitimate reasons it may be possible to attend another lab session that same week **IF THERE IS ROOM** (Maximum occupancy: 18 students/lab).
- You can only attend a different lab session if **advance permission (1 week)** has been granted by the laboratory instructor.

Cleanup:

- **EVERYONE** will be held responsible for cleaning up their area at the end of the lab session.
- Data won’t be signed until all equipment has been neatly put away and the bench tops wiped down with a wet sponge.
Data
- Record everything in ink in your lab notebook. There should be no pencil used.
- Have the instructor sign and date your notebook data before leaving the lab to receive full credit.

Lab Reports
- Report format will vary throughout the semester. It is your responsibility to know what format applies to each experiment.
- Reports must be word-processed. *Calculations may be handwritten.*
- Reports are due at the beginning of the next lab session.
- Late reports will be penalized at a rate of -1pt/day for being late (Maximum 5 pt deduction.)
- Late lab reports are always worth 5 points as long as they are turned in before the last meeting time.

Lab Notebooks
- You will be required to have a bound laboratory notebook beginning the first day of lab (see picture at right). The notebook should contain graph paper pages (not ruled if possible).
- ANYTHING written in your lab notebook must be recorded in INK.
- Write your name and lab section number on the front of the lab notebook.
- Glue and tape a copy of the official table of contents into the first page of your notebook.
- Number each page of the lab notebook.
- Before coming to lab, outline the experimental procedure using the following split page technique.
  - Glue and tape the lab procedure into the lab notebook on the left hand side of each page.
  - Reserve the right hand portion of each page for your notes and observations.
  - It is okay to double up on procedures (2 per page) if you know you won’t be recording observations and measurements for that part.
- Lab notebooks will be checked periodically throughout the semester (unannounced).
- Lab notebooks will be collected at the end of the semester and graded.
Study Hints

- Prioritize:
  1. Notes/Lectures
  2. Homework and suggested problems
  3. Read the textbook to fill in the details

- For this five-credit class, you should plan to spend **15-20 HOURS** a week on reading, practice problems, homework, and lab reports. If you are not getting expected results from your time and efforts, consider getting help to improve the **efficiency** of your study time.

- Organize a study group (look for groups on the D2L discussion board).
- Talk to the instructor whenever you can (during lab and office hours).
- Enlist the free tutoring services of the Learning Center.
- Follow the schedule and be aware of changes.
- Use flashcards to assist in memorization.
- **Being able to work on problems independently is critical to getting good scores on exams. Reading or even being able to understand solutions done by other people is NOT enough.**

Tip 1: **COME TO CLASS ON TIME AND PREPARED.** This course will be fast-paced throughout the whole semester. No matter how clear the lecture—if it is your first encounter with the material—you will not be able to retain all of the content. On the other hand, if you have looked through relevant chapter coverage in advance, watched the posted videos, and reviewed previously covered material, the lecture will make a lot more sense and you are much more likely to retain newly learned concepts.

Tip 2: **ATTEND LECTURES.** Each class period will usually cover half of a chapter and consist of a mixture of lecture, discussion, and example problem solving. The material will be presented to facilitate the different learning styles of students with various backgrounds. Most importantly, you will have the chance to work on problems, work with classmates in pairs or small groups, ask questions, and get feedback during class.

Tip 3. **WORK PROBLEMS DILIGENTLY AND INDEPENDENTLY.** In Chemistry courses, you won’t be able to grasp a concept or theory completely and correctly unless you try to solve the problems **all by yourself.** After each class, go over the lecture notes and corresponding sections in the textbook and then try to do the end-of-chapter problems to make sure you understand the material. If you still find yourself getting stuck on the problems, review your notes and book to seek similar examples and figure out which part blocks you from solving the problem. Always progress to needing your notes less and eventually not at all to be ready for exams.

Tip 4: **FORM OR JOIN A STUDY GROUP.** Working with other students is one of the most effective ways to learn chemistry. You may want to form a study group based on your lab section or just on the basis of a common time to meet. You can often get immediate help from your study partners on a sticky concept, and helping other people is an excellent way to make sure that you have a good understanding of the material. It’s often more useful to explain to someone else how to work a problem than it is to work it yourself.

Tip 5: **HELP IS AVAILABLE.** If you have difficulty, **seek help immediately and NEVER ever wait until the last minute to talk with me.**

- You are strongly encouraged to visit me during my office hours or to contact me via e-mail if you want to schedule another time to meet.
- Free tutoring for chemistry students is available in the Learning Center, T.4300. You are strongly encouraged to utilize these trained tutors either by dropping by or, preferable, signing up for scheduled hours each week.
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<thead>
<tr>
<th>Week</th>
<th>Laboratory</th>
<th>Textbook</th>
<th>Important Dates</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>L1: Lab Safety &amp; Hypochlorite in Bleach</td>
<td>Chapter 12: Solutions</td>
<td>8/29 (F) Last day to drop/add</td>
</tr>
<tr>
<td>2</td>
<td>L2: Solubility of a Salt</td>
<td>Chapter 12: Solutions</td>
<td>9/1 (M) Campus Closed, No Classes</td>
</tr>
<tr>
<td>3</td>
<td>L3: Freezing Point Depression</td>
<td>Chapter 13: Kinetics</td>
<td></td>
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<tr>
<td>4</td>
<td>L4: Determination of Reaction Rates</td>
<td>Chapter 13: Kinetics</td>
<td>9/16 (T) Problem Set 1</td>
</tr>
<tr>
<td>5</td>
<td>L5: Determination of Equilibrium Const.</td>
<td>Chapter 14: Equilibrium</td>
<td>9/23 (T) Exam 1 (Ch. 12 &amp; 13)</td>
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<tr>
<td>6</td>
<td>L6: Le Chatelier’s Principle</td>
<td>Chapter 14: Equilibrium</td>
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<tr>
<td>7</td>
<td>L7: Det. of an Acid Dissociation Const.</td>
<td>Chapter 15: Acid/Base</td>
<td>10/9 (Th) Problem Set 2</td>
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<td>8</td>
<td>None</td>
<td>Chapter 15: Acid/Base</td>
<td>10/14 (T) Exam 2 (Ch. 14 &amp; 15)</td>
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<td>9</td>
<td>L8: Buffer Titration</td>
<td>Chapter 16: Ionic Equil.</td>
<td>10/16 -10/17 No Classes (Ed. MN)</td>
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<td>11</td>
<td>L10: Det. of Hr &amp; Calorimeter Comp.</td>
<td>Chapter 17: Thermo</td>
<td>11/6 (Th) Problem Set 3</td>
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<td>12</td>
<td>None</td>
<td>Chapter 17: Thermo</td>
<td>11/11-11/12 (T, W) No Classes</td>
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<td>13</td>
<td>L11: Redox Potentials</td>
<td>Chapter 18: Electrochem</td>
<td>11/12 (W) Student Success Day</td>
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<td>14</td>
<td>None</td>
<td>Chapter 18: Electrochem</td>
<td>11/13 (Th) Exam 3 (Ch. 16 &amp; 17)</td>
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<tr>
<td>15</td>
<td>L12: Faraday’s Constant</td>
<td>Chapter 20: Organic</td>
<td>11/26 (W) Last day to withdraw</td>
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<tr>
<td>17</td>
<td>None</td>
<td>Final Exam Review &amp; Final Exam</td>
<td>12/16 (T) Study day</td>
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<td>12/18 (Th) 9:00-11:00 am Cumulative Final Exam (Ch. 12-18, 20)</td>
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