**Course Information**

Spring, 2019  
**Lecture:** Friday, 10:30 AM - 11:20 AM in WALC 2124

**Lab**

<table>
<thead>
<tr>
<th>Section</th>
<th>Day</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>0002</td>
<td>Wednesday</td>
<td>2:50 - 5:40 PM</td>
<td>BRWN 2134</td>
</tr>
<tr>
<td>0003</td>
<td>Wednesday</td>
<td>11:30 - 2:20 PM</td>
<td>BRWN 2134</td>
</tr>
</tbody>
</table>

Course Credit Hours: 2 credit hours  
Course Webpage: [https://mycourses.purdue.edu/](https://mycourses.purdue.edu/)

**Instructor**

Lead Instructor: Dr. Minjung Ryu  
Office: WTHR 228/BRNG 4166  
Email: mryu@purdue.edu  
Phone: 765-494-2357  
Office Hours: Appointment Only  
Instructor's Webpage: [https://www.chem.purdue.edu/ryu/](https://www.chem.purdue.edu/ryu/)

Course Supervisor: Matt Wu (wu1061@purdue.edu)

Teaching Assistants: Matt Wu (wu1061@purdue.edu) & Casey Wright (wrigh401@purdue.edu)
Office: WTHR 110B

**Course description**

This course is an integrative study of the fundamental principles and ideas of chemistry as chemists have come to understand them. The pedagogy of this course is designed to provide reflective, interactive, and hands-on inquiry learning experiences that will assist pre-service elementary teachers to develop key chemistry knowledge for their own classrooms. This course is not a teaching methods course. Thus, the focus of the course is on pre-service elementary teachers’ own learning of chemistry content, not how to teach chemistry in elementary schools. This course is required of students in the elementary education program in the School of Education and is not available for credit towards graduation in the School of Science.

**Prerequisites**

MA 130 or equivalent
Course website
Blackboard Learn is our course management system. You can access the course website at http://mycourses.purdue.edu. It is strongly suggested that you explore and become familiar not only with the site navigation, but with content and resources available for this course. For example, you will find in the left-hand course menu the items Student Help and Student Success. Student Help contains information about Blackboard Learn, including tutorials to help you learn about Blackboard Learn functionality, as well as a link to the Purdue Libraries. Student Success contains many resources offered through programs at Purdue to help you become successful in your courses, such as tutoring, downloadable resources and more.

Learning outcomes
By the end of the course, you will be able to:

1. Identify fundamental ideas of chemistry that are applicable to teaching in elementary schools
   - Methods of Evaluation: Quizzes, Homework, Exams, and Participation in lecture and lab discussions
2. Apply your understanding of chemistry ideas to hands-on experiments and everyday situations
   - Methods of Evaluation: Laboratory reports, Participation in lecture and lab discussions
3. Develop multimodal texts that demonstrate your understanding of chemistry ideas
   - Methods of Evaluation: CHEM Projects
4. Generate ideas to explain chemical phenomena and criticize each other’s ideas in pursuit of scientific explanations
   - Methods of Evaluation: Participation in lecture and lab discussions

Learning resources, texts, & materials

- **Required Textbook**: This course does not require any textbook.
- **Reading materials**: Will be posted on the course Blackboard.
- **Laboratory Manual (Required)**: Chemistry 20000 Laboratory Manual, Available at the University Bookstore
- **Lab materials**: In addition to a lab manual, a padlock for your assigned lab drawer (by week 4, January 28 – February 1), a sharpie (black, permanent ink) for marking lab glassware, and approved safety goggles, available at the bookstores, outside WTHR 200 during the first two weeks of classes, or from the storeroom on the first or second floor in BRWN, are required for lab.
- **i>clicker device**: This course will use i>clicker questions in lectures. Your response to i>clicker questions will count as a participation grade. You can purchase i>clicker at the bookstores, outside WTHR 200 during the first two weeks of classes.
- **Calculator**: A simple battery operated scientific calculator may be needed for exam.
- **Boilercast**: is available on the course blackboard (left hand side column)

How to succeed in this course
If you want to be a successful student:

- Be self-motivated and self-disciplined.
- Be willing to “speak up” if problems arise.
- Be willing and able to commit to 4 to 6 hours per week outside of course meetings.
- Be able to communicate through writing.
- Be able to meet the minimum requirements for the course.
- Accept critical thinking and decision making as part of the learning process.

In contrast, here are some common behaviors that lead to failing the course.

- Don’t read until the night before the discussion.
- Wait until the last day complete assignments.
- Forget about deadlines.
- Ignore emails from the instructor and/or your peers regarding course activities.
- Don’t get familiar with the grade book and syllabus.
Instructor’s face-to-face office hours
Appointment only.

Instructor’s online hours
I will be available via email and will respond as soon as I can. If you do not hear back from me within a reasonable time frame (48 hours), please send me a reminder.

Course Schedule, Exam, & Assignments
Here is a tentative schedule for class topics. Changes in lecture topics and/or days may take place during the semester. Any changes, should they occur, will be announced in lectures. **Attendance in lecture is required.** If material is covered in lecture or announcements are made, you are responsible for that information. You are required to read all assigned reading materials, which will be posted in Blackboard. Homework will also be posted in Blackboard. All homework assignments are **due the midnight of the day before the lab**, and you are required to submit your homework to the course Blackboard. All homework deadlines are indicated in the table below.

(Wait until you know the date of the final exam before you make travel plans that might conflict with the exam. Early exams will not be given to accommodate your travel plans.)

<table>
<thead>
<tr>
<th>WK</th>
<th>Date</th>
<th>Topic</th>
<th>Essential Questions</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1/11</td>
<td>Nature of Chemistry</td>
<td>• What is chemistry&lt;br&gt;• What are “small particles” in chemistry?</td>
<td>How does a scientific theory become a scientific law? from <em>Science and Children</em></td>
</tr>
<tr>
<td>2</td>
<td>1/18</td>
<td>Small particles that make up matter</td>
<td>• What are ways to categorize matter?&lt;br&gt;• How do people describe and represent matter in chemistry?&lt;br&gt;• How are the submicroscopic structure and organization of particles related to observable properties?</td>
<td>Chemistry is the Study of Matter from <em>Middle School Chemistry</em></td>
</tr>
<tr>
<td>3</td>
<td>1/25</td>
<td>Structure and organization of atoms</td>
<td>• What does it look like on the inside of an atom?&lt;br&gt;• How have our understandings of atoms historically developed?&lt;br&gt;• What does the periodic table of elements tell us about the elements and their properties?</td>
<td>Parts of the Atom from <em>Middle School Chemistry</em></td>
</tr>
<tr>
<td>4</td>
<td>2/1</td>
<td>Air</td>
<td>• What are observable properties of gas?&lt;br&gt;• How can chemistry explain the observable properties of gas with behavior of gas particles?&lt;br&gt;• What makes up air?</td>
<td>Hot Air Balloons from <em>ChemMatters</em></td>
</tr>
<tr>
<td>5</td>
<td>2/8</td>
<td>Water 1: Observable properties of water</td>
<td>• What are observable properties of water?&lt;br&gt;• How can chemistry explain properties of water?</td>
<td>Water of Life from <em>ChemMatters</em></td>
</tr>
<tr>
<td></td>
<td>Date</td>
<td>Topic</td>
<td>Questions</td>
<td>Reference</td>
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<td>--------------------------------------------</td>
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</table>
| 6 | 2/15  | Water 2: Submicroscopic structures of water and intermolecular forces | • What are molecules and how do molecules interact with each other?  
• What are ionic bonding and observable properties of compounds made with ionic bonding? | The Great Hartford Circus Fire from *ChemMatters*  |
|   |       |                                            | Exam 1: Feb 20 (Wed) 8:00 – 9:30 PM MJIS 1001                                               |                              |
| 7 | 2/22  | Properties of solutions                    | How does dissolving solute into water change properties of water?                            | Salting Roads from *ChemMatters*  |
| 8 | 3/1   | Energy and Matter                          | • What is energy?  
• How do the ideas of energy help us explain and predict natural phenomena?                | Thermometer from *ChemMatters*   |
| 9 | 3/8   | Acids and Bases                            | • What are acids and bases?  
• How does chemistry explain phenomena related to acids and bases?                           | Sinkholes from *ChemMatters*    |
| 10| 3/15  |                                            | Spring Break                                                                                   |                              |
| 11| 3/22  | Electrochemistry                           | How do behaviors of electrons explain electricity and oxidation/reduction                      | Flaking Away from *ChemMatters* |
| 12| 3/29  | Polymers and Plastics                      | What are polymers?  
• What are the environmental concerns posed by use of synthetic polymers?                  | Plastics Go Green from *ChemMatters*   |
| 13| 4/5   | Chemistry and Designing                    | How is chemistry knowledge applied to design a product to have desired properties?           | TBD                           |
| 14| 4/12  | Food and Chemistry                         | What chemistry knowledge helps us understand food and nutrition?                              | FODMAP from *ChemMatters*      |
| 15| 4/19  | Climate Change                             | What is climate change and how does chemistry help our understanding of climate change?      | Life in a Greenhouse from *ChemMatters* |
| 16| 4/26  | Course Review                              | What are key chemistry ideas relevant to our life and elementary science teaching?            |                              |

Final Exam: Week of 4/29 – 5/3 - TBA
Laboratory Schedule

<table>
<thead>
<tr>
<th>Day</th>
<th>Date</th>
<th>Lab Week &amp; Activity</th>
<th>Homework</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1/9</td>
<td>Lab Week 1: Properties of Matter 1: Classification of matter</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1/16</td>
<td>Lab Week 2: Properties of Matter 2: Density of matter</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1/23</td>
<td>Lab Week 3: Atomic Models</td>
<td>Homework 1</td>
</tr>
<tr>
<td>4</td>
<td>1/30</td>
<td>Lab Week 4: Properties of Gas</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2/6</td>
<td>Lab Week 5: Amazing Properties of Water</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>2/13</td>
<td>Lab Week 6: Intermolecular Forces</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>2/20</td>
<td>Lab Week 7: Properties of Water Solutions</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>2/27</td>
<td>Lab Week 8: Energy</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>3/6</td>
<td>Lab Week 9: Acids and Bases</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>3/13</td>
<td>Lab Week 10: No Lab (Spring Break)</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>3/20</td>
<td>Lab Week 11: Electrochemistry</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>3/28</td>
<td>Lab Week 12: Polymers</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>4/3</td>
<td>Lab Week 13: No Lab (Compensation for Night Exams)</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>4/10</td>
<td>Lab Week 14: Alka Seltzer Rockets</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>4/17</td>
<td>Lab Week 15: Fat Extraction</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>4/24</td>
<td>Lab Week 16: Checkout</td>
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</table>

*Four pop quizzes are going to be administered in labs throughout the semester.*

Course Grading

- **Exam (350 pts): Exams are mandatory!** There will be two 90-minute evening exams in this course (100 points each). The Final Exam is a 2-hour comprehensive exam (150 points). The time and place will be announced mid-semester. Wait until you know the date of the final exam before you make travel plans that might conflict with the exam. Final exams will not be rescheduled to accommodate your travel plans. The exams will be multiple choice and short answer questions that will probe your general knowledge and understanding of the ideas that have been presented and will test your ability to apply learned knowledge to new situations that you may not have considered previously.
  
  **Exam I: Feb 20 (Wed) 8:00 – 9:30 p.m. MJIS 1001**
  
  **Exam II: Mar 27 (Wed) 8:00 – 9:30 p.m. MJIS 1001**
  
  **Final Exam: TBD**
  
  Attendance at exams is required. There are **NO** make-up exams and absences are not excused except those covered by the GAPS/MAPS policies (see pp. 11-12).

  If you have a direct conflict with another exam, class, or required university activity, contact the General Chemistry office (BRWN 1144) **at least one week before** the conflict. You will be asked to provide written verification of the conflict. If an emergency occurs, contact the General Chemistry office (BRWN 1144) as soon as possible.

  You should arrive at least 15 minutes before the exam start time. If you arrive more than 15 minutes after the exam start time, you will not be allowed to take the exam. Take your PUID, an appropriate (non-graphing) calculator, and two lead pencils with you to the exam. You may not share a calculator with another student.

  University policy on Final Exams states: “**Students scheduled for more than two (final) examinations in one calendar day are entitled to reschedule and examination in excess of two. It is the responsibility of the student to make necessary arrangements before the last week of regularly scheduled classes.**”
• **Lab activities (390 pts):**

  **Safety:** We take your safety and that of your classmates seriously. You can be dismissed from lab and receive no credit for attendance if you appear to be a danger to yourself or to your classmates or if you violate safety regulations presented on the page in this packet titled "Safety Policies for Chemistry Labs".

  In each lab period, you will engage in a laboratory activity designed to encourage your understanding of that week’s material (30 points each). Laboratory work is designed to provide you with hands-on experience of doing chemistry, and to assist you in making connections between the chemical concepts and what is observed in lab, and in everyday life. Many of the investigations are appropriate for the instruction for elementary school children. It is hoped that by performing these activities, you will be able to more effectively use them in your own teaching. All the activities will be completed and submitted for evaluation within the laboratory period unless asked otherwise. The laboratory period is 2 hours and 50 minutes in length.

  You should review the experimental purposes and procedures for the investigations to be performed that day prior to coming to lab. A laboratory schedule of the experiments that will be performed each week is located in the course packet and on the course Blackboard site.

  If you are more than 10 minutes late to lab you will not be allowed to stay in lab and you will be given a grade of zero for that laboratory assignment. If you arrive to lab inappropriately dressed, you will also be asked to leave the lab and you will be given a grade of zero for that laboratory assignment.

  Lab activities will be graded based on your lab reports. Complete the lab report appropriately:
  - Use a pen and write neatly.
  - Label graphs and tables.
  - Use the data your team collected for the calculations and analysis unless asked otherwise.
  - Use correct units of measurement and significant figures.
  - Ensure results and conclusions are consistent with your data and observations.
  - **Note:** Lab report grading is not solely based on the correctness of your response. Some questions, in particular those in which you are asked to “think,” “brainstorm,” “provide an explanation,” “come up with ideas,” or “reason,” do not presume one right answer. It is to encourage you to reason about experiments and observations you made. For those questions, your grading will be based on how solid your reasoning is, how detailed and specific your explanation is, how well you support your answer with data and logic.

  In the lab, you will be work in team. You have to endeavor to work as an effective member of a team. Lab reports are due before leaving lab the day lab work is completed and the lab is closed, that is 10:20 AM or 5:40 PM. Lab reports submitted up to 24 hours late are worth 50%. **Lab reports submitted after 24 hours are worth no (zero) credit.** Graded lab reports will be returned one week after they are submitted.

  It is suggested that all lab partners review the graded report, as exams will likely include lab-related questions.

• **Pop quizzes (40 pts):** Throughout the semester, you will have four pop quizzes in laboratories. The quizzes serve as a means to check your preparation for the lab. To be prepared for the quiz, you must review the lab manual of the week and understand foundational concepts of the lab and procedure. **NO MAKE-UP QUIZZES WILL BE GIVEN.**
• **Homework (50 pts):** Homework has a very specific purpose: to give you, the learner, first-hand experience in applying the concepts to some other situations in which contents you have learned in class can be used and to supplement course content that cannot be covered in lecture due to time constraints. The assignment, along with appropriate due dates, will be posted on Blackboard. Consult the course calendar (Pages 3-4) for the exact dates of homework assignment. **NO LATE HOMEWORK ASSIGNMENTS WILL BE ACCEPTED.** You may e-mail your TA your assignment if you are going to miss class.

• **Readings:** It is a huge problem that many students in K-16 grade levels do not like to read in content areas, in particular in science. Throughout the semester, reading materials will be assigned each week. All reading materials are 3-5 pages long and written in non-technical languages targeting middle to high school students. It will not be checked whether if you read each material or not. It is your responsibility to read the materials. Content in all reading materials will be drawn upon in lectures, labs, homework, and exams. **You are encouraged to post a short summary of reading each week (a guideline will be posted on the Blackboard) and will earn participation points by doing so. Each post will count as 3 points toward your course participation grade if you post by midnight on Monday.**

• **Class Participation (100 pts):** Your active participation is a vital aspect of this course. You are required to
  - Arrive at the lecture hall and laboratories on time and stay focused until the very end of the session. Note that dismissal time for the labs may be earlier than the scheduled time (10:20 or 5:40) and vary in each week and different lab sections. **No complaints on the lab dismissal time will be tolerated.**
  - Be ready to participate cognitively and verbally in various classroom learning activities, such as class discussions, group discussions, presentations, and i>clicker, in the lectures and labs, as well as in the Blackboard activities. To be ready for class participation, you should read assigned materials, review lecture notes, preview lab manual, and complete homework assignments. In class, your role is not a passive observer or absorber of knowledge, but an **active constructor of knowledge.** You should actively think about given problems, share your ideas, listen to others’ ideas, and refine your ideas. From this process, you will reach understandings that actually make sense to you. **When we have class discussions, it does not matter if you have correct ideas or not. What matters most is how actively you think, share, and develop ideas and understanding.** In lectures, we will use i>clickers to gauge your ideas and understandings. Class participation also includes your active participation in the blackboard, such as participating in discussion forum and frequent access to the course materials posted in the Blackboard.
  - Contribute to creation of positive learning environments. Every individual contributes to the learning environment of the course. You must exhibit professional attitude and behavior, which includes positive attitude to learning, respect for the course instructor, TAs, and other students, and support for each other’s learning. **Your disruptive behavior and attitude can lead to lowering your participation points.**

You can earn up to 100 pts from participation. It will be calculated based on the following grading scheme:
  - Answering i>clicker question: 1 pt each question
  - Answering online discussion questions and responding to other’s response: 3 pts and 1 pt respectively per each post
  - Visiting the course Blackboard: 1 pts per one hour spent in the blackboard (In previous semesters, students spent 8-10 hours on average throughout a semester)
  - Posting reading summary: 3 pts per each post
  - Sharing publicly your ideas in lecture and labs: 1 pts per each session
• **CHEM Project (100 pts):** In this project, you and your classmates (up to three people in each group) will create multimodal texts about your selected topic. Multimodal text is any form of presentations that contain more than one “mode” – written texts, visual representation, videos, music, etc. It includes, but is not limited to, a short storybook with visual representations, comics, performance, song, videos etc. If you decide to create a performance or song, you will video-record your performance and submit the video footage. For more details, visit [http://creatingmultimodaltexts.com/](http://creatingmultimodaltexts.com/). Each group will comprise of two or three members, from either the lab partner group or other groups. Each group will choose a topic covered in class, create multimodal texts to present the selected topic. By April 10, your group has to submit:
  o A brief synopsis of your multimodal texts that describes (less than one page, single-spaced) target topics and what modes of communication are incorporated
  o Multimodal texts of your group’s creation that may be, but are not limited to,
    ▪ 3-5 minute long video footage
    ▪ 3-5 page long storybook or comic
  To determine an appropriate format and length of your project, you may consult Dr. Ryu.

<table>
<thead>
<tr>
<th>Course Components</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exams</td>
<td>350 pts</td>
</tr>
<tr>
<td>Lab Activities</td>
<td>390 pts</td>
</tr>
<tr>
<td>Pop Quizzes</td>
<td>40 pts</td>
</tr>
<tr>
<td>Homework</td>
<td>50 pts</td>
</tr>
<tr>
<td>CHEM Project</td>
<td>100 pts</td>
</tr>
<tr>
<td>Class participation</td>
<td>100 pts</td>
</tr>
<tr>
<td><strong>TOTAL POSSIBLE SCORE</strong></td>
<td><strong>1030 pts</strong></td>
</tr>
<tr>
<td>Extra credits</td>
<td>30 pts</td>
</tr>
</tbody>
</table>

**Policies**

**Computer and cell phone use in class**

Computer and cell phone use is strictly limited to educational purposes. You may use your personal device to look up information or be asked to complete in-class assignment using computer and/or cell phone. You are not allowed to use them for non-academic purposes (e.g., social media, online shopping). Inappropriate use of computer or cell phone may result in deduction of participation points. Please silence all cell phones and pagers before coming to lectures and laboratories.

**Attendance**

Students are expected to be present for every meeting of the classes in which they are enrolled. Only the instructor can excuse a student from a course requirement or responsibility. When conflicts or absences can be anticipated, such as for many University sponsored activities and religious observations, the student should inform the instructor of the situation as far in advance as possible. For unanticipated or emergency absences when advance notification to an instructor is not possible, the student should contact the instructor as soon as possible by email, or by contacting the general chemistry office. When the student is unable to make direct contact with the instructor and is unable to leave word with the instructor’s department because of circumstances beyond the student’s control, and in cases of bereavement, the student or the student’s representative should contact the Office of the Dean of Students.

The link to the complete policy and implications can be found at: [http://www.purdue.edu/studentregulations/regulations_procedures/classes.html](http://www.purdue.edu/studentregulations/regulations_procedures/classes.html)

All lectures will start promptly at 10:30 and end at 11:20. Students have to arrive at the lecture hall prior to the start time and are not allowed to pack up before the end time. Failures to do so may affect negatively your participation grade. Students with excessive absences will also be reported to Elementary Education-Department of Curriculum and Instruction. Teacher Education Council, Form D-2 dealing with attendance may be filed with Elementary Education.
Laboratory Attendance
Lab attendance is required since CHM 20000 is a laboratory course. There are **no make-up labs** or excused absences, except those covered by the GAPS or MAPS policies (see pp. 11-12).

You are required to complete at least 10 of the 13 scheduled lab projects to pass the course. If you fail to complete or miss **more than three** lab projects, an automatic grade of “F” will be assigned for the course at the end of the semester.

A failure to complete (zero score) will be assigned in the following cases:

- being absent for any reason (except GAPS/MAPS approved absences)
- being dismissed from lab for an incomplete Safety Certification (score <20/25)
- being dismissed from lab for safety violations, including dress and goggle infractions
- arriving more than 10 minutes late
- inadequate preparation that hinders lab participation
- not contributing constructively to the group’s work in lab
- failure to submit a lab report
- not participating in preparation of the lab report

You must complete the online safety certification found on Blackboard with a score of 20/25 or better by **11:59 PM on Tuesday, January 8**. You must confirm your score in the Blackboard grade center. You will receive a zero for each lab you miss due to an incomplete safety certification.

Lab Preparation
**Before each lab, read the experiment to help you prepare.** Arrive on time, properly dressed, and prepared for lab work. If you arrive at lab more than 10 minutes late or improperly dressed, you will be asked to leave the lab and will receive a score of zero for that week’s lab and a quiz if it is scheduled on that day.

Lab Absences
CHM 20000 is a laboratory course and the professors have determined that participation in and completion of a minimum of ten (10) labs throughout this semester will be required to pass the course. Absences or fail-to-complete labs will be graded as follows at the end of the semester since we are not evaluating reasons for absences.

- 1st absence or fail-to-complete lab:
  score of zero; you will be provided an opportunity to make up **maximum 50% of the score** by writing and submitting an essay addressing: key learning objectives of the lab, key procedure, key findings of the lab, and connection to the lecture.
- 2nd absence or fail-to-complete lab:
  score of zero; no opportunity will be given to make up any missing point.
- 3rd absence or fail-to-complete lab:
  score of zero; **your final grade will be dropped by one letter grade** at the end of the semester
- 4th absence or fail-to-complete lab:
  grade of “F” in CHM 20000

Note: If you are dismissed from lab at any time during a lab because of a safety violation (e.g., not wearing safety goggles as directed, wearing improper clothing or shoes for the laboratory work environment, disposing of hazardous waste in an improper manner) then **that lab will count as an absence or fail-to-complete lab** and a score of zero will be recorded and handled as described above.
Before you come to the lab on January 9
- Purchase required materials.
- Read all the information in this course packet.
- Read the relevant Reading Assignments and Learning Objectives (on Blackboard).
- Complete the safety certification available on the course Blackboard page with a score of at least 20/25 by 11:59 PM on Tuesday, January 8. You must complete your safety certification before you can work in lab.

Grading scale
After the Final Exam your course grade will be based on the following guaranteed percent of total points for the semester. Lower cutoff ranges may be used if the professor considers it appropriate.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90.0% - 100%</td>
</tr>
<tr>
<td>B</td>
<td>80.0% - 89.99%</td>
</tr>
<tr>
<td>C</td>
<td>70.0% - 79.99%</td>
</tr>
<tr>
<td>D</td>
<td>60.0% - 69.99%</td>
</tr>
<tr>
<td>F</td>
<td>0.0% - 59.99%</td>
</tr>
</tbody>
</table>

This approach to grading means that the grade you get in this course depends primarily on your own effort and performance. It also ensures that all students who do well in the course will get good grades.

Incompletes
A grade of Incomplete (I) will be given only in unusual circumstances. To receive an “I” grade, a written request must be submitted prior to April 26 and approved by the instructor. Requests are accepted for consideration but in no way ensure that an incomplete grade will be granted. The request must describe the circumstances, along with a proposed timeline for completing the course work. You will be required to fill out and sign an “Incomplete Contract” form that will be turned in with the course grades. Any requests made after the course is completed will not be considered for an incomplete grade.

Academic Dishonesty
Academic integrity is one of the highest values that Purdue University holds. Individuals are encouraged to alert university officials to potential breaches of this value by either emailing integrity@purdue.edu or by calling 765-494-8778. While information may be submitted anonymously, the more information that is submitted provides the greatest opportunity for the university to investigate the concern. Purdue prohibits "dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty." [Part 5, Section III-B-2-a, University Regulations] Furthermore, the University Senate has stipulated that "the commitment of acts of cheating, lying, and deceit in any of their diverse forms (such as the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest." [University Senate Document 72-18, December 15, 1972]

Please review the following resource page on plagiarism:
http://www.education.purdue.edu/discovery/research_integrity.html

and academic integrity:
https://www.purdue.edu/odos/academic-integrity
The Purdue Honor Pledge:
“As a boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do. Accountable together - we are Purdue”

Copyright materials
Students are expected, within the context of the Regulations Governing Student Conduct and other applicable University policies, to act responsibly and ethically by applying the appropriate exception under the Copyright Act to the use of copyrighted works in their activities and studies. The University does not assume legal responsibility for violations of copyright law by students who are not employees of the University.

A Copyrightable Work created by any person subject to this policy primarily to express and preserve scholarship as evidence of academic advancement or academic accomplishment. Such works may include, but are not limited to, scholarly publications, journal articles, research bulletins, monographs, books, plays, poems, musical compositions and other works of artistic imagination, and works of students created in the course of their education, such as exams, projects, theses or dissertations, papers and articles.

For more information, please visit the following webpage:
http://www.purdue.edu/policies/academic-research-affairs/ia3.html

Course Materials
As used in this paragraph, the term "instructor" is defined as the individual who authored the material being presented as part of the course.

Among the materials that may be protected by copyright law are the lectures, notes, and other material presented in class or as part of the course. Always assume the materials presented by an instructor are protected by copyright unless the instructor has stated otherwise. Students enrolled in, and authorized visitors to, Purdue University courses are permitted to take notes, which they may use for individual/group study or for other non-commercial purposes reasonably arising from enrollment in the course or the University generally.

Notes taken in class are, however, generally considered to be "derivative works" of the instructor's presentations and materials, and they are thus subject to the instructor's copyright in such presentations and materials. No individual is permitted to sell or otherwise barter notes, either to other students or to any commercial concern, for a course without the express written permission of the course instructor. To obtain permission to sell or barter notes, the individual wishing to sell or barter the notes must be registered in the course or must be an approved visitor to the class. Course instructors may choose to grant or not grant such permission at their own discretion, and may require a review of the notes prior to their being sold or bartered. If they do grant such permission, they may revoke it at any time, if they so choose.

Missed or late work
No late work will be accepted. No make-up work will be provided.
Grief absence policy for students
Purdue University recognizes that a time of bereavement is very difficult for a student. The University therefore provides the following rights to students facing the loss of a family member through the Grief Absence Policy for Students (GAPS). GAPS Policy: Students will be excused for funeral leave and given the opportunity to earn equivalent credit and to demonstrate evidence of meeting the learning outcomes for missed assignments or assessments in the event of the death of a member of the student’s family.

See the University’s website for additional information:
http://www.purdue.edu/studentregulations/regulations_procedures/classes.html

Military absence policy for students
If you are required to complete mandatory military service, notify the Office of the Dean of Students (ODOS) at 765-494-1747 to request that a notice of the leave be sent to instructors. See the Course Coordinator for more information.

Violent behavior policy
Purdue University is committed to providing a safe and secure campus environment for members of the university community. Purdue strives to create an educational environment for students and a work environment for employees that promote educational and career goals. Violent Behavior impedes such goals. Therefore, Violent Behavior is prohibited in or on any University Facility or while participating in any university activity.

See the University’s website for additional information:

Mental Health
If you find yourself beginning to feel some stress, anxiety, and/or feeling slightly overwhelmed, try wellTrack, https://purdue.welltrack.com/. Sign in and find information and tools at your fingertips, available to you at any time. If you need support and information about options and resources, please see the Office of the Dean of Students, http://www.purdue.edu/odos, for drop-in hours (M-F, 8am-5pm). If you are struggling and need mental health services, Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at (765)494-6995 and http://www.purdue.edu/caps/ during and after hours, on weekends and holidays, or through its counselors physically located in the Purdue University Student Health Center (PUSH) during business hours.

Emergency Statement
In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor’s control. Relevant changes to this course will be posted onto the course website or can be obtained by contacting the instructors or TAs via email or phone. You are expected to read your @purdue.edu email on a frequent basis.

Accessibility and Accommodations
Purdue University strives to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, you are welcome to let me know so that we can discuss options. You are also encouraged to contact the Disability Resource Center at: drc@purdue.edu or by phone: 765-494-1247.
Nondiscrimination statement
Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life.

Purdue University views, evaluates, and treats all persons in any University related activity or circumstance in which they may be involved, solely as individuals on the basis of their own personal abilities, qualifications, and other relevant characteristics.

Purdue University prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, genetic information, marital status, parental status, sexual orientation, gender identity and expression, disability, or status as a veteran. The University will conduct its programs, services and activities consistent with applicable federal, state and local laws, regulations and orders and in conformance with the procedures and limitations as set forth in Purdue’s Equal Opportunity, Equal Access and Affirmative Action policy which provides specific contractual rights and remedies. Additionally, the University promotes the full realization of equal employment opportunity for women, minorities, persons with disabilities and veterans through its affirmative action program.

Any question of interpretation regarding this Nondiscrimination Policy Statement shall be referred to the Vice President for Ethics and Compliance for final determination.

You may want to refer students to Purdue’s nondiscrimination statement:
http://www.purdue.edu/purdue/ea_eou_statement.html

Course Evaluation
During the last two weeks of the course, you will be provided with an opportunity to evaluate this course and your instructor. Purdue now uses an online course evaluation system. You will receive an official email from evaluation administrators with a link to the online evaluation site. You will have up to two weeks to complete this evaluation. Your participation is an integral part of this course, and your feedback is vital to improving education at Purdue University. I strongly urge you to participate in the evaluation system.

Feedback on Learning
Throughout the semester, you will receive feedback on your learning as a form of grades in homework, quizzes, lab reports, and midterm exams. All these feedbacks are to help you learn in the course beyond simply monitoring the final grades. You are responsible for reading comments provided by the course instructor and TAs rather than checking only the grades. If you have any question on grading, you can submit a request to review your grades. Any request other than addition errors must be submitted in legible writing along with the graded material. You should wait at least 24 hours after receiving a grade before a complaint is made. After the 24 hours has passed, you will write to Dr. Ryu a short explanation that shows as concisely as possible why you think the grading is inaccurate. Dr. Ryu will take action on your appeal, and a reply will be made in writing. **Direct, person-to-person pleading with the instructor or teaching assistants WILL NOT be allowed. NO negotiation of grades will be tolerated.** Your materials (except for exams) must be completed in pen to be eligible for a regrade.
Lab Safety

Students’ safety in the laboratory is a priority and everyone is required to follow the following lab safety regulations. Failure to comply with any of the safety regulations will result in being sent home from lab with a score of zero, which counts as a lab absence.

- Proper dress (clothing and shoes) is required. Your clothing must cover you from your neck (collarbone) to your ankles when sitting, standing or reaching. Your feet must be completely covered by your shoes. Your best option for chemistry lab attire is a t-shirt, jeans without holes, and sneakers with socks. **If you attend lab in unacceptable attire, you will be sent home and will receive a zero for the lab.** Unacceptable clothing includes, but is not limited to: sleeveless or low-cut (i.e. below the collar bone) tops, pants that have holes or rips of any size, cropped pants, shorts, short skirts, open-toed and/or open-heeled shoes, sandals (with or without socks), ballet flats, or slippers. **In short, your skin must be covered from your collarbone down to your feet.**
- Goggles are required at all times in the laboratory, including during report-writing and lab check-out. If you are in lab and your goggles are not covering your eyes, you will be sent home and will receive a zero for the lab report and lab quiz. This includes the period of time during which you are writing the lab report.
- Wear gloves when specified.
- Food and beverages (including water bottles) are never allowed in the labs.
- All backpacks, coats and other personal belongings must be placed on the coat rack.
- If your hair is longer than shoulder length you must tie it behind your head.
- Contact lens wearers are encouraged to wear glasses in the laboratory.
- Follow your instructor’s guidance on appropriate handling of hazardous materials and disposal of chemical waste.
- Promptly clean up spills and tidy the laboratory before leaving.
- Cell phones generally are not permitted in the laboratory except when the lab activities require the use of it, such as responding to Hot Seat questions or online research. The use of a cell phone for other reasons that are not related to lab activities (e.g., online shopping, Facebook, texting, etc.) may result in being dismissed from the laboratory and result in a zero on that lab. For extenuating circumstances, please check with your TA before lab starts.
- You will be required to follow the instructions printed in your lab manual or given to you by the teaching assistant for appropriate handling of hazardous materials.
Dropping a Chemistry Course/Check-Out

- Dropping a course: If a student drops a chemistry course after having checked into a locker drawer, it is the student's responsibility to immediately follow check-out procedures.
- Check-out: Check-out procedures are required of every student on the last day of lab for each freshman chemistry course. Failure to check-out at the designated time will result in (1) a minimum fee of $45 (2) a forfeiture of the student's right to determine the acceptability of all locker drawer equipment and (3) your lock will be cut.

Disclaimer

This syllabus is subject to change.