CHEM 103: General, Organic, and Biochemistry 1

Dr. Dan Albert

Fall 2019

Contact Information

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office: Caputo Hall 214

The best way to reach me is via university email.

Office Hours

I have an open door policy for meeting with you outside of class. If you ever walk by my door and it is open please feel free to stop to talk about any questions, comments, or concerns you have. The following times you can be guaranteed to find me in my office:

- Mondays from 2 - 3 pm
- Tuesdays from 4 - 5 pm
- Thursdays from 3 - 5 pm
- Fridays from 12 - 1 pm

If you cannot make it to office hours please feel free to set-up an alternative time to meet with me by corresponding with me via email.

Course Purpose

Our goal is to learn beginning chemistry principles and apply those principles to the world around us. Energy, clean air and water, medicines, better consumer products, and many others are strongly tied to chemistry!

The problem solving techniques and approaches we use in this class are broadly applicable to thinking about many questions you will encounter in your life!
Course Description

An introduction to the basic theories of general and organic chemistry, including nomenclature, reactions and problem solving. Appropriate for non-science majors and satisfies general education requirements. Proficiency in algebra is essential.

Course Learning Objectives

- Be able to use qualitative and quantitative skills to solve chemistry problems (Problem Solving)
- Be able to use chemical theories to explain chemical and physical phenomena (Critical Thinking)
- Be able to organize, present, and interpret data to draw reasonable conclusions (Communication)
- Be able to explain natural phenomena encountered outside the classroom using chemical principles
- Be able to use appropriate and safe laboratory procedures

Meeting Times

- Lecture
  Mondays and Wednesdays from 10:00 - 10:50 am in 102 Brossman Hall
- Lab
  Section 01A: Thursdays from 10:00 - 11:50 am in 332 Caputo Hall
  Section 01B: Thursdays from 1:10 - 3:00 pm in 332 Caputo Hall
  Section 01C: Thursdays from 5:00 - 6:50 pm in 332 Caputo Hall

Required Materials

  Good news: your textbook for this class is available for free online!
  Your book is available in web view and PDF for free. You can also purchase on iBooks for $4.99 or get a print version, if you prefer, on Amazon.com for about $55.
  You can use any of the formats. Web view is designed to work well on any device.
  The textbook can be found at [https://openstax.org/details/books/chemistry-atoms-first-2e](https://openstax.org/details/books/chemistry-atoms-first-2e)
• Scientific Calculator: Your calculator for this course must be able to handle logarithms and exponents. This type of calculator can be found for around $10. 

Mobile communication devices and calculator programs/internal memory are not acceptable for use on exams

• Laboratory Notebook: Permanently bound notebook (No perforations or binders)

• Safety Goggles: Available from Bookstore or Chemistry Supply Room: Caputo 330

• Regular access to D2L (https://millersville.desire2learn.com/) and university email

Title IX

Millersville University and its faculty are committed to assuring a safe and productive educational environment for all students. In order to meet this commitment, comply with Title IX of the Education Amendments of 1972, 20 U.S.C. §1681, et seq., and act in accordance with guidance from the Office for Civil Rights, the University requires faculty members to report to the University’s Title IX Coordinator incidents of sexual violence shared by students. The only exceptions to the faculty members reporting obligation are when incidents of sexual violence are communicated by a student during a classroom discussion, in a writing assignment for a class, or as part of a University-approved research project. Faculty members are obligated to report to the person designated in the University Protection of Minors policy incidents of sexual violence or any other abuse of a student who was, or is, a child (a person under 18 years of age) when the abuse allegedly occurred.

Information regarding the reporting of sexual violence, and the resources that are available to victims of sexual violence, is available at http://www.millersville.edu/socialeq/title-ix-sexual-misconduct/index.php

Class Environment

I value a learning environment that is engaging, respectful, and helpful. I ask that you help maintain a learning environment that meets these goals for everyone in the class. Anyone whose behavior is disruptive of the learning environment will be asked to leave. My goal is for you to feel comfortable, appreciated, fairly treated, and encouraged to challenge yourself and obtain success. Please come talk to me if there is anything I can do to help support you in achieving success.
Grading

Your grade in this course will be calculated using the following components and weighting.

<table>
<thead>
<tr>
<th>Category</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skill Checks</td>
<td>10</td>
</tr>
<tr>
<td>Problem Sets</td>
<td>10</td>
</tr>
<tr>
<td>Regular Exams</td>
<td>40</td>
</tr>
<tr>
<td>Final Exam</td>
<td>15</td>
</tr>
<tr>
<td>Lab Notebooks and Reports</td>
<td>25</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Your final grade will be determined by your overall percentage grade using the above grading scheme.

In order to pass CHEM 103 you must have a passing grade in both the lecture (Skill Checks, Problem Sets, Regular Exams, and Final Exam) and laboratory portions of the class. The cut-off percentages for each grade are given below. I reserve the right to lower grade cut-offs, but under no circumstances will the grade cut-offs be higher than those listed below.

<table>
<thead>
<tr>
<th>Grade Cut-off (%)</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>93</td>
<td>A</td>
</tr>
<tr>
<td>90</td>
<td>A-</td>
</tr>
<tr>
<td>87</td>
<td>B+</td>
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<tr>
<td>83</td>
<td>B</td>
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<tr>
<td>80</td>
<td>B-</td>
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<tr>
<td>77</td>
<td>C+</td>
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<tr>
<td>73</td>
<td>C</td>
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<td>C-</td>
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<tr>
<td>67</td>
<td>D+</td>
</tr>
<tr>
<td>63</td>
<td>D</td>
</tr>
<tr>
<td>60</td>
<td>D-</td>
</tr>
<tr>
<td><strong>F</strong></td>
<td></td>
</tr>
</tbody>
</table>

Problem Sets

Weekly problem sets will be given throughout the semester. Each problem set will consist of suggested problems from your textbook and 5 graded problems. Only the graded problems need to be submitted. However, I strongly suggest that you attempt the suggested problems before working on the graded problems. Solutions to the suggested problems will be available through the student answer keys for the textbook. Each problem set is equally weighted in the problem set category.

All detailed solutions can be accessed via D2L (https://millersville.desire2learn.com/)
Skill Checks

Weekly Skill Checks will be assigned so that both you and I can see your progress in the course. Skill checks will need to be completed by 11:59 pm on Sundays when assigned. These checks will consist of five questions on D2L (https://millersville.desire2learn.com/). You will have up to three opportunities to take the skill checks. Only your highest score counts.

Regular Exams

Three regular exams will be given during our regular lecture meeting times. Each exam will contain one or more of the following types of questions: multiple choice, short answer, and worked problems. All exams in this course are considered cumulative, but will focus on the material covered since the last exam. Each regular exam is equally weighted in the regular exam category.

If your percentage grade on the final exam is higher than your lowest percentage regular exam score, your percentage grade on the final will replace your lowest regular exam score.

Final Exam

A two hour cumulative final exam will be given at the end of the semester. The final exam will take place on Thursday December 12th from 8:00 am - 10:00 am in 102 Brossman Hall.

Lab Notebooks and Reports

All lab work must be completed in the laboratory notebook. Each regular lab is equally weighted in the regular lab category. The general format for notebook entries for each experiment is as follows:

- Title of experiment and date (Due 24 Hours Before Lab)
- Purpose of the experiment (Due 24 Hours Before Lab)
- Brief outline of the procedure (Due 24 Hours Before Lab)
- Organized recording of data and observations
- Results, Calculations, and Graphs
- Conclusion Paragraph and answers to any post-lab questions

Lab Notebooks are due outside of your lab instructor’s office 24 hours before your lab period. When submitted lab notebooks should have the experiment from the previous week complete and have the preparatory work for the next experiment completed. Preparatory work includes the Experiment Title, Experiment Purpose, and a Brief Outline of the Experimental Procedure.
Attendance, Absences, and Make-Ups

Attendance at every lecture and lab is expected. If you must miss a lecture, please see a fellow classmate for notes. I will post all course materials to D2L. 

Late or Make-Up Problem Sets, Labs, and Exams will not be allowed except under the following circumstances and prior notification is required unless it is an emergency situation

- Required religious observation
- Participation in a Millersville University athletic event
- Armed forces related training or drills
- Medical Illness/Emergency
- Serious Illness or Death in the family
- Special circumstances: If you feel that you have a special circumstance that is of similar importance to the items listed above, please come talk with me as soon as possible and I will work with you to help you be successful in the course.

Academic Honesty

The Millersville University Academic Honesty Policy states that:

*Students of the University are expected to be honest and forthright in their academic endeavors. To falsify the results of ones research, to steal the words or ideas of another, to cheat on an examination, to allow another person to commit, or assist another in committing an act of academic dishonesty, corrupts the essential process by which knowledge is advanced.*

The entire academic honesty policy can be found at [http://www.millersville.edu/english/for-faculty/academic-integrity/index.php](http://www.millersville.edu/english/for-faculty/academic-integrity/index.php)

All work that is turned in for a grade should be completed by the person whose name appears on the work. Students found to have violated the academic honesty policy will receive a score of zero on the assignment. Repeated instances of academic misconduct will be given the harshest punishment.

Suggestions for Course Success

My expectation is that you are working on CHEM 103 material for 6 hours every week outside of class. This effort needs to be consistent throughout the semester. If you find yourself having difficulty with any part of the course, you should arrange to come meet with me as soon as possible so that we can work together to help you be successful. Here are my suggestions for being successful in this course.
• Work on chemistry a little bit every day.

  Set aside 60 minutes each day to work on chemistry outside of class.

• Read the textbook and work example problems before coming to class.

• Attend, participate, and take notes at all lectures.

  Ask questions during class. I love to get questions during class.
  Take notes to capture key points and ideas.

• Re-Read the textbook after class and fill-in your notes with additional details.

• Work at least five new problems a day.

  The way you work through a problem matters.
  Try to work problems by minimally looking at your notes or the textbook.
  Starting problems is the most difficult part. Give yourself five minutes.
  Solve problems from start to finish by yourself.

• Utilize helpful resources.

  Form study groups.
  Stop by my office and ask questions. We can always find a time to meet.
  Use materials available on D2L.

### Chemistry Peer Learning

Chemistry Peer Learning Hours are dedicated times available for students to come together and work on chemistry! Stop by at any or all of the Peer Learning Hours. All Peer Learning Hours are staffed by a chemistry tutor to assist you if needed.

Chemistry Peer Learning Hours Schedule:

• Tuesdays, Wednesdays, and Thursdays from 1 - 3 pm in Caputo 212

• Tuesdays, Wednesdays, and Thursdays from 5 - 7 pm in Roddy 153

### Important Dates

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/3</td>
<td>Last Day to Add or Drop a Course Online</td>
</tr>
<tr>
<td>11/1</td>
<td>Last Day to Withdraw from Course and Receive a ‘W’</td>
</tr>
<tr>
<td>12/12</td>
<td>CHEM 103 Final Exam at 8:00 am</td>
</tr>
</tbody>
</table>
## Course Schedule

The instructor reserves the right to change this schedule as needed. Any changes will be communicated via an in-class announcement.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>Reading</th>
<th>Exams</th>
<th>Laboratory Exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/26</td>
<td>Classification of Matter</td>
<td>1.1 - 1.3</td>
<td></td>
<td>Orientation and Lab Safety</td>
</tr>
<tr>
<td>9/2</td>
<td>Measurements and Conversions</td>
<td>1.4 - 1.6</td>
<td></td>
<td>Measurements and Density</td>
</tr>
<tr>
<td>9/9</td>
<td>Atomic Structure</td>
<td>2.1 - 2.4</td>
<td></td>
<td>Separation of a Mixture</td>
</tr>
<tr>
<td>9/16</td>
<td>Atomic Structure</td>
<td>3.1 - 3.4</td>
<td></td>
<td>Flame Testing Elements</td>
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<tr>
<td>9/23</td>
<td>Periodic Trends</td>
<td>3.5 - 3.6</td>
<td>Exam 1 on 9/25</td>
<td>Nomenclature</td>
</tr>
<tr>
<td>9/30</td>
<td>Compounds</td>
<td>3.7 and 4.1 - 4.4</td>
<td></td>
<td>Light Absorption</td>
</tr>
<tr>
<td>10/7</td>
<td>Intermolecular Forces</td>
<td>4.6 and 10.1 - 10.2</td>
<td></td>
<td>Molecular Models and IMFs</td>
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<tr>
<td>10/14</td>
<td>Gas Laws</td>
<td>8.1, 8.2, and 8.6</td>
<td></td>
<td>Gas Law Relationships</td>
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<tr>
<td>10/21</td>
<td>Phase Changes</td>
<td>10.3 - 10.5</td>
<td>Exam 2 on 10/23</td>
<td>Temperature Changes with Evaporation</td>
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<tr>
<td>10/28</td>
<td>Molecular Composition</td>
<td>6.1 - 6.4</td>
<td></td>
<td>Formula of a Compound</td>
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<tr>
<td>11/4</td>
<td>Balanced Chemical Equations</td>
<td>7.1 - 7.3</td>
<td></td>
<td>Batteries and pH</td>
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<tr>
<td>11/11</td>
<td>Stoichiometry</td>
<td>8.1, 8.2, and 8.5</td>
<td></td>
<td>Solutions, Dilutions, and Titrations</td>
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<tr>
<td>11/18</td>
<td>Energy and Chemistry</td>
<td>9.1 - 9.2</td>
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<td>Chemical Equilibrium</td>
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<tr>
<td>11/25</td>
<td>Exam</td>
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<td>Exam 3 on 11/25</td>
<td>NO LAB</td>
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<tr>
<td>12/2</td>
<td>Kinetics and Equilibrium</td>
<td>17.5, 13.1, and 13.3</td>
<td></td>
<td>Lab Checkout/Make-Up Labs</td>
</tr>
<tr>
<td>12/9</td>
<td>FINAL EXAM</td>
<td></td>
<td>Final Exam on 12/12 at 8:00 am</td>
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