

Science of Contemporary Issues III – 4758  
CHEM 1003 Section 3  
Spring Quarter, 2020



*Welcome to Science of Contemporary Issues III! CHEM 1003 is the third class of a three-quarter sequence focused on real-world applications of chemistry. This quarter will focus on the chemistry of polymers, plastics, drugs, nutrition and chemicals in food. The first quarter focused on sustainability, pollution, and climate change. Last quarter we explored fundamental aspects of non-covalent interactions, nuclear chemistry, redox reactions, and energy storage.*

**Lecture Instructor:** Professor Bryan J. Cowen; **Laboratory Instructor:** Professor Emily Barter

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**Office:** Seeley G. Mudd, Room 132 Zoom

**Lecture:** TR 12:00 p.m. – 1:30 p.m. in Zoom

**Office Hours:** By appointment. Please e-mail me at least one day in advance.

**Textbook:** *Chemistry in Context, Applying Chemistry to Society*, 9<sup>th</sup> edition by Bradley D. Fahlman, Kathleen L. Purvis-Roberts, et al. (and others) [Required]

**Clicker:** ~~A Turning Point clicker [Required] and cloud access subscription [Required] available at the bookstore~~ **[We will not be using clickers this quarter]**

**Calculator:** A non-graphing, scientific calculator is required for the course.

**Canvas:** The University of Denver uses Canvas as its learning management system. You may log in to <https://du.instructure.com> with your DU ID number and PioneerWeb password to access the course. Please ensure your settings allow for e-mail announcement notifications. Here are some helpful Canvas resources to get you started:

Canvas Student Quickstart Guide: <http://guides.instructure.com/m/8470>

Canvas Student Guide: <http://guides.instructure.com/m/4212>

**Academic Integrity:** I have high expectations for each and every one of you as students at the University of Denver. While I encourage group study sessions outside of class, I expect you to work independently during in class examinations. Any deviations from this policy will not be tolerated. For more information, please see the University of Denver's official Honor Code at: <http://www.du.edu/studentlife/studentconduct/>

**Science and Engineering Center:** Need extra help? The Science and Engineering Learning Center is a collaborative space staffed by undergraduate and graduate learning assistants (LAs) trained to assist students with some first and second year biology, chemistry, physics, computer science and

engineering courses. Our goal is to help students grow as problem solvers by assisting with homework sets, lab reports, and preparing for exams. Students can access help by going to <http://portfolio.du.edu/SEC> & viewing the schedule for each discipline. Students can access LAs by clicking on the Zoom "room" link at the top of each discipline schedule.

**Welcome to CHEM 1003:** Here is a sample of the topics covered throughout this year-long sequence:

<b>Fall – CHEM 1001</b>	<b>Winter – CHEM 1002</b>	<b>Spring – CHEM 1003</b>
• Sustainability	• Purification of Drinking Water	• Plastics
• Air Pollution	• Nuclear Power	• Drugs
• The Ozone Layer	• Nuclear Weapons	• Nutrition
• Climate Change	• Solar Power	• Chemicals in Foods
• Fossil Fuels	• Batteries	• GMOs
• Power Plants	• Alternative Energy Sources	

### **Student Learning Outcomes (SLOs):**

Upon completion of this one-year course sequence, students should become proficient in these areas and/or develop these skills:

#### **Scientific Inquiry – Natural and Physical World SLOs**

1. Apply knowledge of scientific practice to evaluate evidence for scientific claims.
2. Demonstrate an understanding of science as an iterative process of knowledge generation with inherent strengths and limitations.
3. Demonstrate skills for using and interpreting qualitative and quantitative information.

#### **Course-Specific SLOs**

4. Use graphs to display numerical data and interpret graphical data.
5. When presented with a science-related question, find relevant information to help answer the question.
6. Evaluate sources of information – especially information gleaned from the Internet – to determine their usefulness.
7. Use the skills described above to evaluate scientific claims in the news; learn to identify bogus science and overblown claims.
8. Have the skills and knowledge to make informed choices that impact your health, the environment, and community well-being; view science as a source of power and not fear.
9. Always ask why. Become empowered to take time to do any necessary research to make your own informed decisions; building both confidence and critical thinking skills.

*Preliminary Course Schedule – Subject to Change*

<b>Week #:</b>	<b>Start Date</b>	<b>Topic/Chapter</b>	<b>Assignments</b>
1:	03/30/20	L1: Ch 9.1 – 9.3 L2: Ch 9.4 – 9.5	<i>Syllabus Quiz due Friday, 4/3</i>
<b>No Lab</b>			
2:	04/06/20	L3: Ch 9.6 – 9.7 & 12.4 L4: Ch 9.8 – 9.11	<i>HW #1 due Friday, 4/10</i>
<b>Lab 1: Polymers (Meet in your TA's Zoom room for this and all subsequent labs)</b>			
3:	04/13/20	L5: Finish Ch 9 and Review; <b>Quiz #1</b> <b>Exam #1 – Chapter 9</b>	
<b>Lab 2: Title TBD</b>			
4:	04/20/20	L6: Canvas Reading Assignment (CRA), pages 483 – 484, & Ch 12.3 L7: CRA; <b>Activity #1</b>	
<b>Lab 3: Title TBD</b>			
5:	04/27/20	L8: CRA; <b>Activity #2</b> L9: CRA; <b>Activity #3</b>	<i>HW #2 due Friday, 5/1</i>
<b>Lab 4: Video Project Work and Update TA on Progress</b>			
6:	05/04/20	L10: Ch 11.1 – 11.5 L11: Ch 11.6 – 11.9; <b>Activity #4</b>	
<b>Lab 5: Extracting Fats from Foods</b>			
7:	05/11/20	L12: Ch 11.10 – 11.13 L13: Finish Ch 11 and Review; <b>Quiz #2</b>	<i>HW #3 due Friday, 5/15</i>
<b>Lab 6: Title TBD</b>			
8:	05/18/20	<b>Exam #2 – Chapters 10 &amp; 11; CRAs</b> L14: CRA & Ch 13.3, 13.6, & 13.8	
<b>Lab 7: The Lactase Enzyme</b>			
9:	05/25/20	<b>Memorial Day – No Class All Sections</b> L15: Ch 13.4 – 13.5	<i>HW #4 due Friday, 5/29</i>
<b>Lab 8: Video Project and Screening (WR sections only)</b>			
10:	06/01/20	L16: Finish Course Content; <b>Activity #5</b> L17: Final Exam Review; <b>Quiz #3</b>	
<b>Lab 8: Video Project and Screening (MT sections only)</b>			
<b>FINAL EXAMINATION (Details TBD)</b>			

**Assignments and Grading:**

<b><u>Category</u></b>	<b><u>Points</u></b>	<b><u>% of Grade</u></b>	<b><u>Additional Info</u></b>
Exams	330	33	2 midterms x 100 points 1 cumulative final x 130 points
Lab Assignments	120	12	6 Labs x 20 points
Video Project (Lab)	90	9	See Canvas
Homework	210	21	4 HW assignments x 50 points 1 syllabus quiz X 10 points
Warm-Up Questions	170	17	Full credit for significant participation 17 lectures x 5 points
Collaborative Quizzes & Activities	80	8	8 assignments, points vary
<b>Totals</b>	<b>1000</b>	<b>100</b>	

<b><u>Points</u></b>	<b><u>Letter Grade</u></b>
930 – 1000	A
900 – 929	A–
870 – 899	B+
830 – 869	B
800 – 829	B–
770 – 799	C+
730 – 769	C
700 – 729	C–
670 – 699	D+
630 – 669	D
600 – 629	D–
≤599	F

**Grading Notes:**

- Final grades will be assigned based on the point scale shown above. The types of assignments and assignment-specific grading procedures are described below.
- No dropped warm-up assignments or clicker points this quarter
- When calculating your course grade, pay attention to the number of points in the Canvas grade book, NOT the letter grade calculated by Canvas.

**Exams:**

- Composed of multiple-choice, fill in the blank, and long-answer questions.
- This quarter, exams will be administered on Canvas
- Make-up or late exams will not be available.
- This quarter, students must take all three exams. If you miss a midterm exam, your score will be a 0/100. If you miss the final exam, your score will be a 0/130.

**Lab:** See lab syllabus from Prof. Barter

**Homework:**

- Due 5:00 pm on due date. Only HW#1 accepted on the following Monday without penalty.
- Composed of assignments that will be posted on Canvas and turned in through Canvas as one .pdf file.
- Graded on correctness with some partial credit.
- Late (following Monday by 5 pm) homework earns maximum 50% of assignment points. A homework assignment turned in past the following Monday after the deadline earns zero points.

**Warm-Ups:**

Before every lecture there will be a short series of questions to answer.

- Due by 7:00 am Tuesdays and Thursdays before each lecture.
- These are graded based on a thoughtful, complete effort, not on correctness. Students typically earn warm-up scores of 100%, as long as they remember to submit the assignments on-time. The two bullet points that follow give an idea of how the grading works:
  - Answers that use evidence to bolster their argument and show an understanding of the reading assignment will receive full credit
  - Answers that rely on direct quotes from the text, are composed of sentence fragments, or are left blank or incomplete will receive a score of zero
- Since warm-ups will be used during class, they may not be turned in late.

**Activities and Collaborative Quizzes:**

- During these in-class assignments you will have time to compare answers and collaborate with classmates (and Prof. Cowen!) and revise your answers based on your discussions.
- Study for these activities and quizzes! They will give you valuable practice with exam-style questions.