Science of Contemporary Issues II – 5319
CHEM 1002 Section 3
Winter Quarter, 2020

Welcome to Science of Contemporary Issues I! CHEM 1002 is the second class of a three-quarter sequence focused on real-world applications of chemistry. This quarter will focus on the chemistry of water, nuclear power, nuclear weapons, electrical devices, renewable power plants, and carbon dioxide in the ocean. The first quarter focuses on sustainability, pollution, and climate change. To understand these topics, we will explore fundamental aspects of non-covalent interactions, nuclear chemistry, and redox reactions.

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Office: Seeley G. Mudd, Room 132

Lecture: TR 12:00 p.m. – 1:30 p.m. in Sturm Hall, Room 281

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

Textbook: *Chemistry in Context, Applying Chemistry to Society, 9th 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

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. We offer support for both lecture and laboratory courses for chemistry, physics, and engineering courses and lecture only for computer science and biology. Our goal is to help students grow as problem solvers by assisting with homework sets, lab reports, and preparing for exams. The Science and Engineering Learning Center is **not** a one-on-one tutoring center, but is rather a support system where students can get guidance from LAs as well as their peers. This center is open to all DU students. All services are free. Located in the north-west corner of the first floor of the Anderson Academic Commons (west of the writing center). See http://portfolio.du.edu/sec for a complete schedule.

Welcome to CHEM 1002: Here is a sample of the topics covered throughout this year-long sequence:

Fall – CHEM 1001	Winter – CHEM 1002	Spring – CHEM 1003
• 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

Week #: Start Date	Topic/Chapter	Assignments
1: 01/06/20	L1: Ch 8.0 – 8.3 L2: Ch 8.4 – 8.7; **Quiz #1**	*Syllabus Quiz due Friday, 1/10*
No Lab		
2: 01/13/20	L3: Canvas Reading Assignment (CRA) L4: Ch 8.12 – 8.13 & CRA	*HW #1 due Friday, 1/17*
Lab 1: Evaporation and Intermolecular Forces (Meet in BW 015 for this and all subsequent labs)		
3: 01/20/20	**No class – MLK Holiday** L5: Lecture 1 – 4 completion and review; **Quiz #2**	*HW #2 due Friday, 1/24*
Lab 2: Begin Lab 8 Flame Challenge Assignment		
4: 01/27/20	L6: Ch 8.8 – 8.9 **Exam #1 – Chapters 8.0 – 8.7, 8.12 – 8.13 and CRAs – Thursday, January 30**	
Lab 3: Behind the Scenes of Ionic Reactions		
5: 02/03/20	L7: Ch 8.10 – 8.11 L8: CRA & 11.12	*HW #3 and #4 due Friday, 2/7*
Lab 4: Titrating the Acetic Acid in Vinegar		
6: 02/10/20	L9: Ch 6.6 & 6.1, 4.9 & 8.2; **Quiz #3** L10: Ch 6.2 – 6.3; **Quiz #4**	*HW #5 due Friday, 2/14*
Lab 5: Biodiesel Synthesis		
7: 02/17/20	L11: Ch 6.4 – 6.5 & CRA; **Quiz #5** L12: CRA	*HW #6 due Friday, 2/21*
Lab 6: Biodiesel Calorimetry		
8: 02/24/20	L13: Lecture 6 – 12 completion and review; **Quiz #6** L14: Ch 7.1 – 7.5	
Lab 7: Electrochemical Cells		
9: 03/02/20	**Exam #2 – Chapters 8.8 – 8.11, 6.1 – 6.6 and CRAs – Tuesday, March 3** L15: Ch 7.6 & 7.9 – 7.11; **Quiz #7**	*HW #7 due Friday, 3/6*
Lab 8: Flame Challenge Presentations		
10: 03/09/20	L16: Ch 7.10 & 6.7 – 6.9 L17: Course review; **Quiz #8**	
No Lab		
03/17/20 (T)	**FINAL EXAMINATION (Chapters 6 – 8) Tuesday, March 17, 12:00 – 1:50 pm**	

Assignments and Grading:

Category	Points	% of Grade	Additional Info
Exams	490	49	2 midterms x 150 points 1 cumulative final x 190 points
Lab Assignments	155	15.5	Labs 1,3,4,5,6 and 7 x 20 points Labs 2 and 8 x 35 points
Homework	155	15.5	5 HW assignments x 20 points 1 HW assignment x 40 points 1 syllabus quiz X 15 points
Warm-Up Questions	75	7.5	Full credit for participation 17 lectures x 5 points Lowest 2 scores dropped
Collaborative Quizzes	80	8	8 quizzes X 10 points
In-Class Clicker Questions	45	4.5	Full credit for participation 17 lectures x 3 points 2 lowest scores dropped
Totals	**1000**	**100**	

Points	Letter Grade
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.
• When your lowest scores for warm-ups and clickers are dropped, they will appear gray in the Canvas grade book
• 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.
• Bring a *non-phone calculator* and pencil with eraser to all exams.
• Make-up or late exams will not be available. If you are not present for one of the midterm exams, that exam will count for zero points and your final exam will count for 340 points instead of 190 points.
• Check the final exam schedule now and make sure that you do not have any scheduling conflicts.

Lab: See lab syllabus from Prof. Barter

Homework:

• Due 5:00 pm on due date.
• Composed of assignments that will be posted on Canvas and turned in to your TA's Homework box or directly to you TA during laboratory or office hours.
• Graded on correctness with some partial credit.
• Late ($\leq$1 week) homework earns maximum 50% of assignment points. A homework assignment turned in $\geq$1 week 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.
• Your lowest warm-up score will be dropped and will not be counted in your final grade.

Collaborative Quizzes:

• During these in-class quizzes 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 quizzes! They will give you valuable practice with exam-style questions.

Clickers:

There will be multiple-choice questions during lecture to answer with your clicker. Take note of how the overall class answers each question. It will help all of us notice if/when the class is struggling with a difficult concept.
• Grades are based on participation, not correctness.
• In order to receive clicker points you need to register your clicker:
• You only need to complete the registration once.
• I will post clicker grades in the grade book at the end of each week throughout the quarter. Check the grade book to make sure that you are getting credit.
• Consult these instructions to ensure that you understand how to use your clicker
http://help.turningtechnologies.com/hardware/Default.htm#Hardware/Clickers/Clickers.htm