SCIENCE OF CONTEMPORARY ISSUES 3 – COURSE SYLLABUS

University of Denver – CHEM 1003 – Spring Quarter 2018

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Teaching Assistant	E-Mail Address	Lab Sections
Jemil Ahmed	Jemil.Ahmed@du.edu	06 & 07 (Tues evening & Wed afternoon)
Broderick (Brody) Bills	Broderick.Bills@du.edu	04 & 05 (Mon evening & Tues afternoon)
Niki Shoup	Niki.Shoup@du.edu	03 & 08 (Monday & Thursday afternoon)

Welcome to CHEM 1003:
This course is the 3rd (and final) part of a yearlong course sequence that fulfills the natural scientific inquiry common curriculum requirement. In this quarter we will use the skills that you developed in CHEM 1001 and 1002 to explore the real-world chemistry of large molecules. This might not sound exciting yet, but it will be: we will learn about the chemicals that compose plastics, drugs, foods, and even your body. The first day of CHEM 1001, I let you all know how excited I was to get to the content in this quarter, it is going to be interesting and a lot of fun!

Quarter	CHEM 1001: Fall	CHEM 1002: Winter	CHEM 1003: Spring
Topics	• Sustainability • Air Pollution • The Ozone Layer • Climate Change • Fossil Fuels • Power Plants	• The Purification of Drinking Water • Nuclear Power • Nuclear Weapons • Solar Power • Batteries • Alternative Sources of Energy	• Plastics and Polymers • Drugs • Nutrition • Chemical Components of Foods • Genetically Modified Organisms (GMOs)

Science of Contemporary Issues is a three-part, yearlong course sequence that fulfills the natural scientific inquiry common curriculum requirement. This course focuses on real-world applications of chemistry. I have worked to minimize the use of complex calculations in this course in favor of an emphasis on learning the other skills that chemists use to solve problems and understand the sub-microscopic world.

Dr. Barter's office hour schedule for Spring Quarter:

Thursdays from 1:15 pm to 3:15 pm (Dr. Barter's Office - Boettcher West 222)

Fridays from 9:30 am to 11:15 am (Dr. Barter's Office - Boettcher West 222)

TA's office hour schedule for Spring Quarter:

Please see the bottom of the Homepage on our Canvas Course Website

CANVAS COURSE WEBSITE: https://canvas.du.edu/courses/60409

This is where you will go to print files for lab, turn in warm-up assignments, take quizzes, and see your grades from assignments. I will use the course Canvas page to post all course files and communicate with the class. If you haven't done so yet, go to Canvas now and:

- Review the **"Getting Started"** Module in Canvas: https://canvas.du.edu/courses/60409/modules
  - Make sure you have all of the required course materials
  - **Configure your notification settings** so that you are alerted when files, announcements, or grades are changed on the Canvas page
- Register your clicker in the **"Clicker Registration"** Module in Canvas. For proper Canvas integration, you must register your clicker through the Module in Canvas, please do not skip this step. ***If you were registered last quarter, you do not need to do another registration. You only need to register your clicker if this is your 1st course with me this academic year, or have purchased a new clicker since CHEM 1002.***
  - Register your clicker through the **"TurningPoint v8 Clicker Registration"** link in the **"Clicker Registration Module"**.
- **Complete the first Warm-Up Assignment:** https://canvas.du.edu/courses/60409/quizzes/54193

LECTURE SCHEDULE			
Section	**Day and Time**	**Time**	**Location**
01	Mon and Weds	12 noon – 1:30 pm	Boettcher Center 101
02	Tues and Thurs	10:00 am – 11:30 am	Sturm Hall 251

LABORATORY SCHEDULE				
Section	**Day**	**Time**	**TA**	**Location**
03	Mon	2:00 pm – 4:50 pm	Niki Shoup	Boettcher Center West 015
04	Mon	6:00 pm – 8:50 pm	Brody Bills	Boettcher Center West 015
05	Tues	2:00 pm – 4:50 pm	Brody Bills	Boettcher Center West 015
06	Tues	6:00 pm – 8:50 pm	Jemil Ahmed	Boettcher Center West 015
07	Weds	2:00 pm – 4:50 pm	Jemil Ahmed	Boettcher Center West 015
08	Thurs	2:00 pm – 4:50 pm	Niki Shoup	Boettcher Center West 015

THE SCIENCE AND ENGINEERING CENTER (SEC) - http://portfolio.du.edu/sec

The teaching assistants will hold all of their office hours in the Science and Engineering Center (SEC). The TA office hour schedules will be posted on our Canvas course home page (scroll to the bottom). Dr. Barter does *not* hold her office hours in the SEC. Dr. Barter will hold both her Thursday and Friday office hours in her office: Boettcher West 222.

The SEC is a collaborative space that is staffed by undergraduate and graduate TAs who are trained to assist students with first and second year chemistry, physics, and engineering courses. Their goal is to help students grow as problem solvers by assisting with homework, lab reports, and exam preparations. The SEC is not a one-on-one tutoring center, it is a place where students can get guidance from TAs as well as their peers, and where students can work together to learn and create community. **The SEC is free and open to all DU students.** The SEC is located in the Northwest corner of the first floor of the Anderson Academic Commons.

MY PLEDGE TO YOU

I was fortunate to have amazing professors and classmates during my time in both college and graduate school. My goal is to provide all of you with that same experience. I want this class to be a valuable, meaningful, and memorable experience for all of you. Our classroom is going to be one of inquiry and inclusiveness; I want everyone to feel welcome to ask any questions that may have. If you have a question it is likely that someone else in class has the same question, so go ahead and ask it! I will do everything I can to make this the best class it can be. If you have comments, you can submit them **anonymously** at any time by leaving a note for me in my mailbox in the chemistry department (Olin Hall, Room 202). I will do my best to incorporate your feedback into how I teach the class. I am thrilled to have each of you in this class and am looking forward to a great quarter.

TECHNOLOGY IN THE CLASSROOM

Phones – Please do not use your phone in class. Phones are distracting to you and to those around you. If I notice you using your phone you will be asked to exit the classroom.

Laptops – Laptops can have a place in the classroom and can be quite useful. You may want to bring your laptop to class to take notes or look up definitions. Keep in mind, however, that laptops can be distracting – not only for you, but to others in the class. Please avoid the temptation of Facebook, online shopping, texting, or other off-topic diversions. **If you use a laptop to take notes, please sit towards the back or sides of the classroom to minimize distracting others.**

In my experience, laptops have an overall negative impact on student learning in the classroom. I recommend taking notes by hand and leaving your laptop at home.

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.

CHEM 1003 Lecture Schedule

Week	Sun	Monday	Tuesday	Wednesday	Thursday	Friday	Sat
1	Mar 25	26	27	28	29	30	31
		Lecture 1: Ch 9.1 – 9.3		**Lecture 2:** Ch 9.4 – 9.5 Laboratory Information		Syllabus Quiz due 5:00pm	
2	Apr 1	2	3	4	5	6	7
		Lecture 3: Ch 9.6 – 9.7 and 12.4		**Lecture 4:** Ch 9.8 – 9.11		Homework #1 accepted until **Monday** 5:00pm **No late homework**	
3	8	9	10	11	12	13	14
	HW1 ok **Monday** 5:00pm	**Lecture 5:** Finish Chapter 9 and Review for Exam #1 **Collaborative Quiz #1**		**Exam 1** Chapter 9			
4	15	16	17	18	19	20	21
		Lecture 6: Canvas Reading Assignment, Pages 483 – 484, and Chapter 12.3		**Lecture 7:** Canvas Reading Assignment **In-Class Activity #1**			
5	22	23	24	25	26	27	28
		Lecture 8: Canvas Reading Assignment **In-Class Activity #2**		**Lecture 9:** Canvas Reading Assignment **In-Class Activity #3**		Homework #2 due 5:00pm	
6	29	30	May 1	2	3	4	5
		Lecture 10: Ch 11.1 – 11.5		**Lecture 11:** Ch 11.6 – 11.9 **In-Class Activity #4**			
7	6	7	8	9	10	11	12
		Lecture 12: Ch 11.10 – 11.13		**Lecture 13:** Exam #2 Review **Collaborative Quiz #2**		Homework #3 due 5:00pm	
8	13	14	15	16	17	18	19
		Exam 2 Chapters 10 and 11		**Lecture 14:** Canvas Reading Assignment and 13.3, 13.6, 13.8 (DNA)			
9	20	21	22	23	24	25	26
		Lecture 15: Ch 13.4 – 13.5 (Protein Structure)		**Lecture 16:** Finish Content **In-Class Activity #5**		Homework #4 due 5:00 pm	
10	27	28	29	30	31	June 1	2
		Memorial Day **No Classes for Section 1 or 2**		**Lecture 17:** Review for Final Exam **Collaborative Quiz #3**			
11	3	4	5				
		Final Exam: Section 1	**Final Exam: Section 2**				

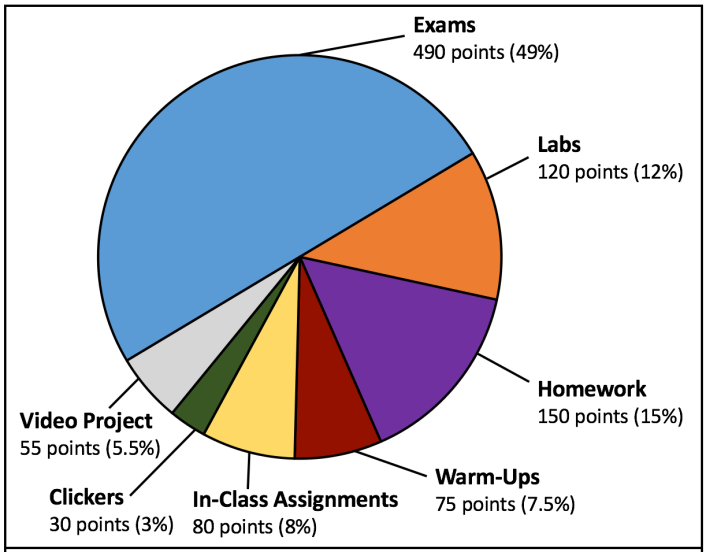
CHEM 1003 Lab Schedule

Week	Sun	Monday	Tuesday	Wednesday	Thursday	Friday	Sat
1	Mar 25	26	27	28	29	30	31
		First Week of Classes – No Labs This Week					
2	April 1	2	3	4	5	6	7
		Lab 1: Synthesis of Polymers Meet in Boettcher Center West 015 for this and all subsequent labs					
3	8	9	10	11	12	13	14
		Lab 2: Synthesis of Aspirin					
4	15	16	17	18	19	20	21
		Lab 3: Analysis of Aspirin (from Lab 2) and Other Drugs					
5	22	23	24	25	26	27	28
		Lab 4: Video Project Group Work and Update TA on Progress					
6	29	30	May 1	2	3	4	5
		Lab 5: Extracting Fats from Foods					
7	6	7	8	9	10	11	12
		Lab 6: Fermentation by Yeast					
8	13	14	15	16	17	18	19
		Lab 7: The Lactase Enzyme					
9	20	21	22	23	24	25	26
		Lab 8: CHEM 1003 Video Project and Screening					
10	27	28	29	30	31	June 1	2
		THERE ARE NOT ANY LABS THIS WEEK! (Study For Final Exams)					
10	3	4	5	6	7	8	
		Final Exam: Section 1	Final Exam: Section 2	Final Exam Week – No Labs			

ASSIGNMENTS & GRADING

Assignment Category	Points	% of Grade	Additional Info
Exams	490	49	2 midterm exams × 150 points 1 cumulative final exam × 190 points
Laboratory Assignments	120	12.0	6 Labs x 20 points each
Video Project – Part of Labs (Laboratory Project)	55	5.5	See the Canvas Video Project Page for more information and due dates
Homework	150	15.0	4 HW assignments × 35 points each 1 syllabus quiz (online) × 10 points
Warm-Up Questions	75	7.5	Full credit for participation 5 points per lecture × 17 lectures Lowest 2 scores dropped
In-Class Assignments & Collaborative Quizzes	80	8	8 Assignments – Point assignments differ by activity, totaling 80 points
In-Class Clicker Questions	30	3	Full credit for participation 2 points per lecture × 17 lectures Lowest 2 scores dropped
TOTALS	**1000**	**100**	**–**

Letter Grade	Points
A	1000 - 930
A−	929 - 900
B+	899 - 870
B	869 - 830
B−	829 - 800
C+	799 - 770
C	769 - 730
C−	729 - 700
D+	699 - 670
D	669 - 630
D−	629 - 600
F	599 or fewer



Point Breakdown by Category

- Final grades will be assigned based on the point scale shown above. The types of assignments and assignment-specific grading procedures will be discussed during Lecture #1. If you have questions, talk with Dr. Barter or your TA.
- 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.

DESCRIPTION OF ASSIGNMENT CATEGORIES

Exams

- Composed of multiple-choice, fill in the blank, and long-answer questions.
- Bring a *non-phone* calculator 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 exam schedule now and make sure that you do not have any scheduling conflicts.**

Labs

- Unless otherwise noted, labs are always in Boettcher West room 015.
- Lab points will be based on your preparedness and safety in lab, and your performance on pre-lab and post-lab assignments.
- **Pre-lab assignments** are due at the beginning of the lab period when the experiment will be conducted. Most labs will include a pre-lab assignment, but labs #2 and #8 will not. These assignments will help you mentally prepare to do the experiment.
- **Post-lab assignments** are due at the beginning of your next lab period. To complete Post-labs you will analyze your data, reflect on what you learned, and/or perform calculations.
- **Lab tardiness**: If you are late to lab by more than 10 minutes, you will miss the weekly safety lecture, and *you will not be allowed to perform the experiment*.
- **Lab attendance**: if you do not perform an experiment, your TA cannot accept your assignments for that lab. *If you are going to miss a lab, plan ahead and try to reschedule the lab.*
- **Rescheduling Labs:** you are allowed to **reschedule one lab period per quarter**:
  - Labs can only be completed during the week they are scheduled in the syllabus.
  - The rescheduling must be completed before your normal lab meeting time.
  - You will need approval from Dr. Barter and both your TA and the TA whose section you will work with that week.

- For example, if you normally have lab on Monday but will be absent on Monday during week 6, you may complete lab #5 on Tuesday, Wednesday, or Thursday, as long as Dr. Barter, the TA from that lab period, and your normal TA approve the switch before your normally scheduled lab period.

- ***The labs are a required component of the class – you will automatically fail the class if you miss two or more labs. Please do not let this happen.***

Make sure that you understand this policy. It is a chemistry department policy that we must follow. **Avoid missing labs!**

Homework (due by 5:00pm on due date) – ONLY HW#1 accepted by Monday without penalty.

- 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.

Warm-Ups

- Before every lecture I will assign three to five questions.
- 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
- Warm-ups are due at 7:00am the morning before every lecture. (Please manage your time so that you are not rushing every morning before lecture to get these done)
- 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.
- Some warm-ups will be marked "CER" and have additional requirements for full credit. See the warm-up assignments on Canvas and the page "Claims Evidence Reasoning (CER) Instructions". https://canvas.du.edu/courses/60409/pages/claims-evidence-reasoning-cer-instructions

In-Class Assignments and Collaborative Quizzes

- These will be similar to other in-class quizzes that you have taken, with one exception: you will have time to compare answers and collaborate with classmates (and Dr. Barter!) and revise your answers based on your discussions.
- Study for these quizzes! They will give you valuable practice with exam-style questions.

Clickers

- I will ask multiple-choice questions in class and you will answer with your clicker. You will feel like you are playing a game and will have more fun. More seriously, clickers help me notice if/when the class is struggling with a difficult concept.
- Grades are based on participation, not correctness.
- In order to receive clicker credit you need to **register your clicker:**
    - Described on Page #2 of the syllabus
    - 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. Email Dr. Barter if you have questions.
https://www.turningtechnologies.com/pdf/UserGuides/ResponseCardRF_RF_LCD_2014.pdf

LATE ASSIGNMENTS

Homework assignments are the *only* assignments in CHEM 1003 that may be turned in late. Homework is allowed late until Monday at 5:00pm. Late penalties are assessed as follows:

Late between Friday (5pm) and Monday (5pm)	Turned in after Monday at 5:00 pm
Score decreased by 50%	Automatic score of zero

ABSENCES

Excused absences – if you are missing class because of a family emergency, illness, a DU athletic event that you are competing in, or a religious activity, submit documentation of the event from the Office of Health and Counseling, your physician, the Athletics Office, etc.

Make-up assignments – If your absence is excused, make-up assignments and/or due date extensions can be arranged. If you do not provide at least 24 hours of advanced notice, we cannot guarantee that a make-up assignment will be available.

If you will be absent for any required course activities during the quarter, tell us about it as far in advance as possible, preferably by the end of the first week of classes. Regardless of the reason for your absence, you will need to provide documentation to validate your absence. You must complete all of the course assignments, but may be able to do so at a different time. Speak with Dr. Barter *before* your absence to work out the details. If you anticipate missing multiple days during the quarter, I recommend a meeting outside of class time where we can sit down and make plans for each of your expected absences.

LAB SAFETY

Lab safety is very serious. If you do not follow safety rules as outlined below and by your TA, you may be asked to leave the lab and given a 0 for that assignment. Chemicals have a reputation for being dangerous. The truth is that chemicals are like tools – they are dangerous when they aren't used properly. Using chemicals safely comes down to these factors:

Clothing
Shoes must cover entire foot
No bare legs
Goggles must be worn at all times
No excessively baggy clothing
Wear gloves when using chemicals

Preparedness
Read the lab procedure and arrive ready to do the experiment
Learn about the hazards of the chemicals you will be using by looking up the MSDS for each chemical. See the *Canvas Lab Course* for more info.

Behavior
Do not bring food or drink to lab
Label all the containers that you use with their contents

Chemical Waste
Follow TA instructions for waste disposal
Never pour anything down the drain unless you are instructed to do so

If you are dressed inappropriately for lab, your TA cannot allow you to attend the lab session.

These rules are here to protect you from chemical spills, accidental fires, eye injuries, and tripping. Safety is our number one priority in the lab. To emphasize the importance of laboratory safety, some points on each lab will be awarded for safe clothing, behavior, and preparedness.

You are required to wear safety goggles during lab. Safety goggles can be purchased very inexpensively from Amazon.com or a variety of retailers. Your TA will review this during lab.

ACADEMIC HONESTY

I encourage you to do CHEM 1003 coursework in groups. Some of your best learning can happen when you explain what you know to someone who doesn't understand. ***However, all work that you turn in should be your own.*** If two identical assignments are turned in, both students will receive grades of zero. The exams in CHEM 1003 count for about half of your grade, and must be accomplished individually, so you need to be able to perform independently.

All members of the University of Denver are expected to uphold the values of Integrity, Respect, and Responsibility. These values embody the standards of conduct for students, faculty, staff, and administrators as members of the University community. Our values are defined as:

Integrity: acting in an honest and ethical manner
Respect: honoring differences in people, ideas, and opinions
Responsibility: accepting ownership for one's own conduct

For more information, consult these resources:

DU Honor Code Statement: http://www.du.edu/studentlife/studentconduct/index.html

DU Policies for Student Conduct: http://www.du.edu/studentlife/studentconduct/policies/

DISABILITY SERVICES PROGRAM

Any student who feels s/he may need an accommodation based on the impact of a disability should contact the Disability Services Program (DSP) in a timely manner to coordinate reasonable accommodations. DSP is located in Ruffatto Hall; 1999 E. Evans Ave. and can be reached at 303-871-2372. Information is also available online at http://www.du.edu/disability/dsp; see the *Handbook for Students with Disabilities*. DSP will provide me with an official notice of accommodations so I can provide support. I cannot provide accommodations without this step.

LEARNING EFFECTIVENESS PROGRAM

The Learning Effectiveness Program (LEP) provides academic support services beyond basic academic accommodations. http://www.du.edu/studentlife/learningeffectiveness

HEALTH AND COUNSELING CENTER

The Health & Counseling Center (HCC) provides many medical and mental health services.
http://www.du.edu/health-and-counseling-center/

INCLUSIVE LEARNING ENVIRONMENTS

In this class, we will work together to develop a learning community that is both inclusive and respectful. Our diversity may be reflected by differences in race, culture, age, religion, sexual orientation, socioeconomic background, and a myriad of other identities and life experiences. The goal of inclusiveness, in a diverse community, encourages and appreciates expressions of different ideas, opinions, and beliefs, so that conversations and interactions that could potentially turn divisive turn instead into opportunities for intellectual and personal enrichment.

A dedication to inclusiveness requires respecting what others say, their right to say it, and the thoughtful consideration of others' communication. Both speaking and listening are valuable tools for furthering thoughtful, enlightening dialogue. Respecting one another's individual differences is critical in transforming a collection of diverse individuals into an inclusive, collaborative, and excellent learning community. Our core commitment shapes our core expectation for behavior inside and outside of the classroom