SCIENCE OF CONTEMPORARY ISSUES 1 – COURSE SYLLABUS

University of Denver – CHEM 1001 – Autumn Quarter 2016

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Teaching Assistant	E-Mail Address	Lab Sections
Nicholas Groves (Nick)	Nicholas.Groves@du.edu	04 and 08 (Mon & Wed evening)
Tina Holt	Tina.Holt@du.edu	06 and 10 (Tues & Thurs evening)
Srivalli Puttagunta (Shree)	Srivalli.Puttagunta@du.edu	05 and 07 (Tues & Weds afternoon)
Niki Shoup	Niki.Shoup@du.edu	03 and 09 (Mon & Thurs afternoon)

Welcome to CHEM 1001:

For many of you, this is your first chemistry class, or even your first science class. Others of you may already know a lot about chemistry and science. Regardless of our backgrounds, we are all going to have a fun and exciting time together! Along the way, we are going to learn how our world works and where we see chemistry in our everyday lives. We will answer many "I wonder how...." questions this year, but more importantly you will learn how to ask and answer these questions independently! The skills you acquire in this course will earn you the title "informed citizen," and will help you to make wiser choices – whether you are voting, buying a product in a grocery store, explaining science to friends and family, or deciding how to get to work.

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	• Plastics • 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. After completing CHEM 1001, you will be familiar with the similarities and differences between atoms, molecules, and subatomic particles that make up our world. You will also learn to draw Lewis structure cartoons of molecules, identify the 3D shapes of molecules, and use a handful of common pieces of laboratory equipment. Subsequent quarters (CHEM 1002 & 1003) will build upon the knowledge and skills that you acquire during this quarter. In other words, this is a year-long sequence because chemistry is a cumulative science. The work we do this quarter will provide the context that makes the 2nd and 3rd quarters of the course both approachable and interesting.

CANVAS COURSE WEBSITE: HTTPS://CANVAS.DU.EDU/COURSES/34666

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/34666/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 **"Clickers"** Module in Canvas, you will register your clicker in 2 ways (You will need your clicker in front of you to do both registrations):
  - Register your clicker on Canvas through the **"Clicker Registration"**.
  - Create a registered TurningPoint account through the **"TurningPoint Clicker Registration"**.
- **Complete the first Warm-Up Assignment:** https://canvas.du.edu/courses/34666/quizzes/29213

LECTURE SCHEDULE			
Section	**Day and Time**	**Time**	**Location**
01	Mon and Weds	12 noon – 1:30 pm	Sturm Hall 134
02	Tues and Thurs	10:00 am – 11:30 am	Boettcher Center Auditorium 101

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	Nick Groves	Boettcher Center West 015
05	Tues	2:00 pm – 4:50 pm	Shree Puttagunta	Boettcher Center West 015
06	Tues	6:00 pm – 8:50 pm	Tina Holt	Boettcher Center West 015
07	Weds	2:00 pm – 4:50 pm	Shree Puttagunta	Boettcher Center West 015
08	Weds	6:00 pm – 8:50 pm	Nick Groves	Boettcher Center West 015
09	Thurs	2:00 pm – 4:50 pm	Niki Shoup	Boettcher Center West 015
10	Thurs	6:00 pm – 8:50 pm	Tina Holt	Boettcher Center West 015

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

The teaching assistants will hold office hours in the Science and Engineering Center (SEC). Their office hour schedules will be posted on our Canvas course home page (scroll to the bottom). Dr. Barter will hold *only* her Friday office hours in the SEC.

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 the classroom. Phones are distracting to you and to those around you. If I notice you using your phone I will ask you to exit the classroom.

Laptops – Laptops can have a place in the modern classroom and can be quite useful. You may want to bring your laptop to class to take notes or look up definitions of words. **However, if you use a laptop to take notes, please sit in the back of the classroom.** The changing colors and motion of a computer screen distract students around you.

In my experience, laptops have an overall negative impact on student learning in the chemistry 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.

CHEM 1001 Lecture Schedule

Week	Sun	Monday	Tuesday	Wednesday	Thursday	Friday	Sat
1	**Sept 11**	**12**	**13**	**14**	**15**	**16**	**17**
		L1: Warm-Up #1, test clickers, Lab 1 info, and Chapter 0.0 – 0.4		**L2:** Ch 0.5 – 0.7 and 1.0 – 1.3		Syllabus Quiz due	
2	**18**	**19**	**20**	**21**	**22**	**23**	**24**
		L3: Ch 1.4 – 1.7 and 2.2 (p 68 – 70) Lab 2 info		**L4:** Ch 1.8 – 1.10 **Quiz #1**		HW #1 due	
3	**24**	**26**	**27**	**28**	**29**	**30**	**Oct 1**
		L5: Ch 1.11 – 1.14 Lab 3 info		**L6:** Ch 2.0 – 2.3 and Lab 4 info **Quiz #2**		HW #2 due	
4	**2**	**3**	**4**	**5**	**6**	**7**	**8**
		L7: Ch 2.4 – 2.7		**Exam 1** Chapters 0 and 1			
5	**9**	**10**	**11**	**12**	**13**	**14**	**15**
		L8: Ch 2.8 – 2.10 Lab 5 info		**L9:** Ch 2.11 – 2.13 **Quiz #3**		HW #3 due	
6	**16**	**17**	**18**	**19**	**20**	**21**	**22**
		L10: Ch 3.0 – 3.3 Lab 6 info		**L11:** Ch 3.4 – 3.7 **Quiz #4**		HW #4 due	
7	**23**	**24**	**25**	**26**	**27**	**28**	**29**
		L12: Ch 3.8 – 3.11 Lab 7 info		**L13:** Reading assignment on Canvas Lab 8 & 9 info and **Quiz #5**		HW #5 due	
8	**30**	**31**	**November 1**	**2**	**3**	**4**	**5**
		Exam 2 Chapters 2 and 3		**L14:** Ch 4.0 – 4.2			
9	**6**	**7**	**8**	**9**	**10**	**11**	**12**
		L15: Ch 4.3 – 4.5		**L16:** Ch 4.6 – 4.9 **Quiz #6** (HW #6 due Weds 11/9)			
10	**13**	**14**	**15**	**16**	**17**	**18**	**19**
		L17: Finish Ch 4.9 & Ch 4.10 – 4.11		**L18:** Ch 0 – 4 Review **Quiz #7** (HW #7 due Weds 11/16)			
11	**20**	**21**	**22**				
		Final Exam Chapters 0 - 4					

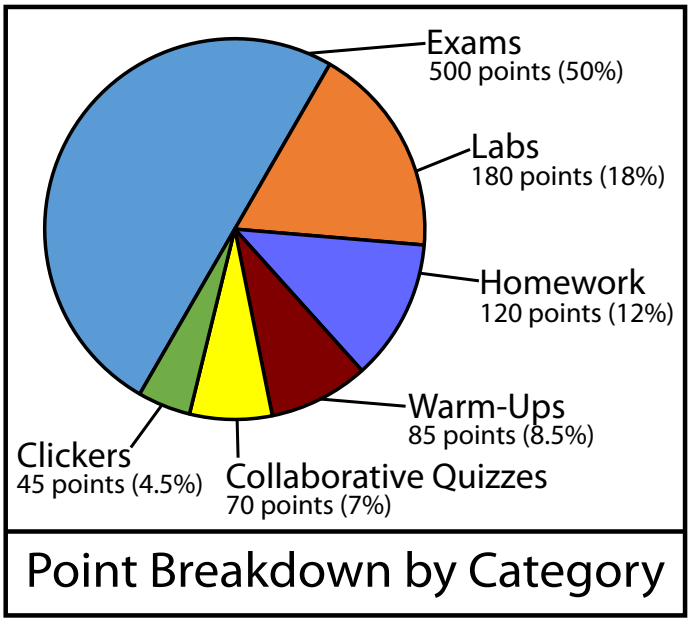
CHEM 1001 Lab Schedule

Week	Sun	Monday	Tuesday	Wednesday	Thursday	Friday	Sat
1	Sept 11	12	13	14	15	16	17
		Lab 1: Intro to Information Literacy AND Graphing Data with MS Excel ****Meet in the STURM 354 computer lab during scheduled lab time (this week only)****					
2	18	19	20	21	21	23	24
		Lab 2: Measurements in the Chemistry Lab Meet in Boettcher Center West 015 for this and all subsequent labs					
3	24	26	27	28	29	30	Oct 1
		Lab 3: Sunscreen and UV-B Radiation					
4	2	3	4	5	6	7	8
		Lab 4: Separating Plant Pigments with Chromatography					
5	9	10	11	12	13	14	15
		Lab 5: Absorption & Emission Spectroscopy of Plant Pigments					
6	16	17	18	19	20	21	22
		Lab 6: Exploring Molecular Shapes with Molecular Models					
7	23	24	25	26	27	28	29
		Lab 7: Carbon Dioxide and the Greenhouse Effect The Lab 9 Research Project assignment will be handed out and discussed in lab this week					
8	30	31	November 1	2	3	4	5
		Lab 8: What's in a Breath? Analysis of Gases					
9	6	7	8	9	10	11	12
		Lab 9: Research Project Presentations					
10	13	14	15	16	17	18	19
		THERE ARE NOT ANY LABS THIS WEEK! (Study For Final Exams)					

ASSIGNMENTS & GRADING

Assignment Category	Points	% of Grade	Additional Info
Exams	500	50	2 midterm exams × 150 points 1 cumulative final exam × 200 points
Lab Assignments	180	18	9 labs × 20 points
Homework	120	12	7 HW assignments × 15 points each 1 syllabus quiz (online) × 15 points
Warm-Up Questions	85	8.5	Full credit for participation 5 points per lecture × 18 lectures Lowest score dropped
Collaborative Quizzes	70	7	7 quizzes × 10 points each
In-Class Clicker Questions	45	4.5	Full credit for participation 3 points per lecture × 18 lectures 3 lowest 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



- 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 350 points instead of 200 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. Review the Lab Schedule for more information. Labs will be held in Sturm 354 the first week only.
- 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 #1 and #9 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, except for labs #1 and #9, which will be completed during one 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 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 5, you may complete lab #5 on Tuesday, Wednesday, or Thursday, as long as 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.***

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

Homework (due by 5:00 pm on due date, online or paper)

- Composed of both handed-in assignments and assignments submitted online.
- 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 about 100%, as long as they remember to submit the assignments. 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 6:00am 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 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/34666/pages/claims-evidence-reasoning-cer-instructions

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 with classmates 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 in 2 ways:**
    - Described on Page #2 of the syllabus
    - You only need to complete each 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 1001 that may be turned in late. Late penalties are assessed as follows:

Late by 1 week or less	Late by more than 1 week
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 hazardous 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 1001 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 1001 count for 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) to coordinate reasonable accommodations. The DSP is located on the 4th floor of Ruffatto Hall; 1999 E. Evans Ave. and can be reached at 303-871-2372. Information is also available on line at http://www.du.edu/disability/dsp; see the *Handbook for Students with Disabilities*. The DSP will provide me with an official notice of accommodations. 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/