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# SCIENCE OF CONTEMPORARY ISSUES 1 – COURSE SYLLABUS

University of Denver – CHEM 1001 – Autumn Quarter 2015

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Teaching Assistant	E-Mail Address	Lab Sections
Dylan Fudge	Dylan.Fudge@du.edu	06 and 10 (Tues & Thurs evening)
Nairi Pezeshkian	Nairi.Pezeshkian@du.edu	05 and 09 (Tues & Thurs afternoon)
Niki Shoup	Niki.Shoup@du.edu	03 and 07 (Mon & Weds afternoon)
Lukas Woodcock	Lukas.Woodcock@du.edu	04 and 08 (Mon & Weds evening)

Welcome to CHEM 1001!

For many of you, this is will be 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 and along the way we are going to learn a lot about how our world works. We will answer many "I wonder how...." questions this year, but – more importantly – you will learn how to ask and answer these questions independently! Hundreds of years ago, these powers would cause others to label you as a "wizard" or a "magician," or maybe something worse. Today, 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, or deciding how to get to work.

Quarter	CHEM 1001: Fall	CHEM 1002: Winter	CHEM 1003: Spring
Topics	<ul style="list-style-type: none"><li>• Sustainability</li><li>• Air Pollution</li><li>• The Ozone Layer</li><li>• Climate Change</li><li>• Fossil Fuels</li><li>• Power Plants</li></ul>	<ul style="list-style-type: none"><li>• The Purification Of Drinking Water</li><li>• Nuclear Power</li><li>• Nuclear Weapons</li><li>• Solar Power</li><li>• Batteries</li></ul>	<ul style="list-style-type: none"><li>• Plastics</li><li>• Drugs</li><li>• Nutrition</li><li>• Chemical Components of Foods</li><li>• Genetically Modified Organisms (GMOs)</li></ul>

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 hard 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, and this quarter will provide the context that makes the 2<sup>nd</sup> and 3<sup>rd</sup> quarters of the course both approachable and interesting.

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**CANVAS COURSE WEBSITE: [HTTPS://CANVAS.DU.EDU/COURSES/17137](https://canvas.du.edu/courses/17137)**

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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:

- **Configure your notification settings** so that you are alerted when files, announcements, or grades are changed on the Canvas page.
- Make sure that you have all of the **required course materials**
- **Complete the first Warm-Up Assignment:** <https://canvas.du.edu/courses/17137/quizzes/16686>

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

LABS				
Section	Day	Time	TA	Location
03	Mon	2:00 pm – 4:50 pm	Niki Shoup	Boettcher Center West 15
04	Mon	6:00 pm – 8:50 pm	Lukas Woodcock	Boettcher Center West 15
05	Tues	2:00 pm – 4:50 pm	Nairi Pezeshkian	Boettcher Center West 15
06	Tues	6:00 pm – 8:50 pm	Dylan Fudge	Boettcher Center West 15
07	Weds	2:00 pm – 4:50 pm	Niki Shoup	Boettcher Center West 15
08	Weds	6:00 pm – 8:50 pm	Lukas Woodcock	Boettcher Center West 15
09	Thurs	2:00 pm – 4:50 pm	Nairi Pezeshkian	Boettcher Center West 15
10	Thurs	6:00 pm – 8:50 pm	Dylan Fudge	Boettcher Center West 15

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**THE SCIENCE AND ENGINEERING CENTER (SEC)**

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Joe and 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).

The SEC is a collaborative space staffed by undergraduate and graduate TAs 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 sets, lab reports, and preparing for exams. 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 solve problems. **The SEC is free and open to all DU students.** Located in the Northwest corner of the first floor of the Anderson Academic Commons (West of the writing center). <http://portfolio.du.edu/sec>

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**MY PLEDGE TO YOU**

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I want this class to be a valuable, meaningful, and memorable experience for all of you. 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 using an online survey tool. I will do my best to incorporate it into how I teach the class. Lets have a great quarter! This is the URL for the survey tool:

<https://www.suggestionox.com/r/eb6eKS>

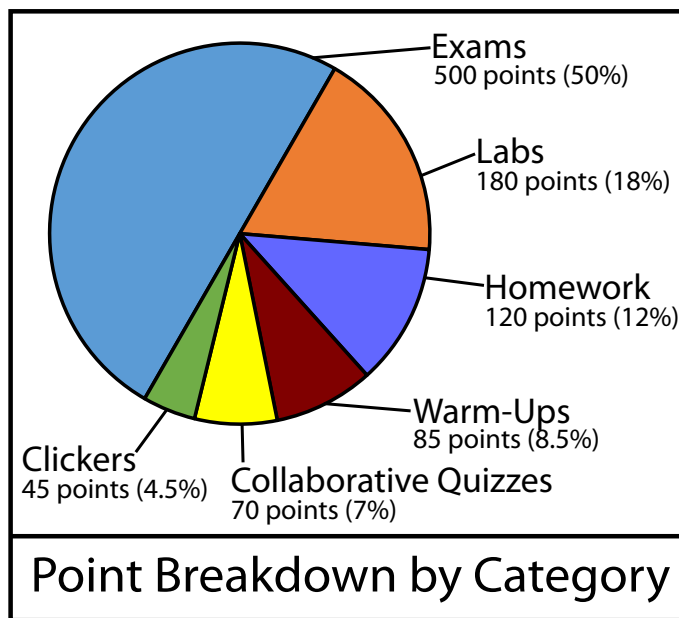
CHEM 1001 Lecture Schedule							
Week	Sun	Monday	Tuesday	Wednesday	Thursday	Friday	Sat
1	Sept 13	14	15	16	17	18	19
		L1: Warm-Up #1, test clickers, Lab 1 info, and <u>Chapter 0.0 – 0.4</u>		L2: <u>Ch 0.5 – 0.7</u> and <u>1.0 – 1.3</u>			
2	20	21	22	23	24	25	26
		L3: <u>Ch 1.4 – 1.7</u> and <u>2.2</u> (p 68 – 70) Lab 2 info		L4: <u>Ch 1.8 – 1.10</u> Quiz #1		HW #1 due	
3	27	28	29	30	Oct 1	2	3
		L5: <u>Ch 1.11 – 1.14</u> Lab 3 info		L6: <u>Ch 2.0 – 2.3</u> and Lab 4 info Quiz #2		HW #2 due	
4	4	5	6	7	8	9	10
		Exam 1 Chapters 0 and 1		L7: <u>Ch 2.4 – 2.7</u>			
5	11	12	13	14	15	16	17
		L8: <u>Ch 2.8 – 2.10</u> Lab 5 info		L9: <u>Ch 2.11 – 2.13</u> Quiz #3		HW #3 due	
6	18	19	20	21	22	23	24
		L10: <u>Ch 3.0 – 3.3</u> Lab 6 info		L11: <u>Ch 3.4 – 3.7</u> Quiz #4		HW #4 due	
7	25	26	27	28	29	30	31
		L12: <u>Ch 3.8 – 3.11</u> Lab 7 info		L13: Reading assignment on Canvas Lab 8 & 9 info and Quiz #5		HW #5 due	
8	Nov 1	2	3	4	5	6	7
		Exam 2 Chapters 2 and 3		L14: <u>Ch 4.0 – 4.2</u>			
9	8	9	10	11	12	13	14
		L15: <u>Ch 4.3 – 4.5</u>		L16: <u>Ch 4.6 – 4.9</u> Quiz #6 (HW #6 due Weds 11/11)			
10	15	16	17	18	19	20	21
		L17: Finish Ch 4.9 & <u>Ch 4.10 – 4.11</u>		L18: Ch 0 – 4 Review Quiz #7 (HW #7 due Weds 11/18)		Final Exam Chapters 0 - 4	

CHEM 1001 Lab Schedule							
Week	Sun	Monday	Tuesday	Wednesday	Thursday	Friday	Sat
1	Sept 13	14	15	16	17	18	19
		<b>Lab 1: Intro to Information Literacy AND Graphing Data with MS Excel</b> Meet in the STURM 354 computer lab during scheduled lab time (this week only)					
2	20	21	22	23	24	25	26
		<b>Lab 2: Measurements in the Chemistry Lab</b> Meet in BW 015 for this and all subsequent labs					
3	27	28	29	30	Oct 1	2	3
		<b>Lab 3: Sunscreen and UV-B Radiation</b>					
4	4	5	6	7	8	9	10
		<b>Lab 4: Separating Plant Pigments with Chromatography</b>					
5	11	12	13	14	15	16	17
		<b>Lab 5: Absorption &amp; Emission Spectroscopy of Plant Pigments</b>					
6	18	19	20	21	22	23	24
		<b>Lab 6: Exploring Molecular Shapes with Molecular Models</b>					
7	25	26	27	28	29	30	31
		<b>Lab 7: Carbon Dioxide and the Greenhouse Effect</b> The Lab 9 Research Project assignment will be handed out and discussed in lab this week					
8	Nov 1	2	3	4	5	6	7
		<b>Lab 8: What's in a Breath? Analysis of Gases</b>					
9	8	9	10	11	12	13	14
		<b>Lab 9: Research Project Presentations</b>					
10	15	16	17	18	19	20	21
		<b>NO LABS THIS WEEK</b>					

## 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
<b>TOTALS</b>	<b>1000</b>	<b>100</b>	<b>–</b>

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 Joe 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.

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## DESCRIPTION OF ASSIGNMENT CATEGORIES

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### 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.
- I will provide the class with exams and answer keys from the previous year for practice.  
**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. See the Lab Schedule on page 4 for more information.
- 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 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

- Composed of 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.
- 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”](#).

## 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 answering 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 when the class is struggling with a difficult concept.
- Grades are based on participation, not correctness.
- In order to receive credit you need to **register your clicker**:
  - Go to the class Canvas page and complete the survey titled “Clicker Registration.” You will need your clicker in front of you to complete this survey.
  - You only need to complete this survey 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. Talk to Joe if you have questions.

[https://www.turningtechnologies.com/pdf/UserGuides/ResponseCardRF\\_RF\\_LCD\\_2014.pdf](https://www.turningtechnologies.com/pdf/UserGuides/ResponseCardRF_RF_LCD_2014.pdf)

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### 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

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### 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 Joe *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.

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### LAB SAFETY

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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.

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### TECHNOLOGY IN THE CLASSROOM

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**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.



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## STUDENT LEARNING OUTCOMES (SLOs)

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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 you 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.

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## ACADEMIC HONESTY

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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/>

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## DISABILITY SERVICES PROGRAM

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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 4<sup>th</sup> 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.

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## LEARNING EFFECTIVENESS PROGRAM

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

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## HEALTH AND COUNSELING CENTER

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