Science of Contemporary Issues
CHEMISTRY 1001-01, Fall 2012
SYLLABUS, POLICIES, AND PROCEDURES

Lectures: M/W 12:00-1:30, 205 Olin Hall

Labs: M-Th 2:00-4:50 pm or 6:30-9:20 pm, BW15

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Telephone: 303-871-2985
Office hours: Mon/Wed 1:30-2:00, Tues/Thurs 11:30-12:30 and by appointment. If my availability changes, an update will be provided in class, via Blackboard and/or posted on my office door.

COURSE WEBSITES

http://blackboard.du.edu

all course handouts, announcements, etc. Check this site daily for any updated info. Access Blackboard directly, not through webcentral.

http://connect.mcgraw-hill.com/class/c_kristensson_m_w_1001-01

***NOTE: This can be accessed directly through blackboard, you do not need to use above link.

Access to homework, additional problems, tutorials, text materials, etc. You are required to register online for access to this site. If you purchased the bundled package of required text from the bookstore, your registration code for the class is contained in those materials.

REQUIRED MATERIALS

A. **"Chemistry in Context: Applying Chemistry to Society"**, **7th Edition**, Catherine Middlecamp, Published 2012, McGraw Hill.

B. **Connect:** McGraw Hill's web-based homework and assignments. Access codes can either be purchased with the book, or **ConnectPlus** allows the purchase of the assignments and an eBook option. Access through **Connect** will be possible through blackboard, but you will need to complete the registration process using your access code.

C. **Clicker:** for class participation by TurningPoint ISBN: 9781934931400 (you are also required to register your clicker online using Blackboard's TurningPoint Tool)

D. **Scientific calculator**. An inexpensive calculator is required. It should have the capabilities for square roots, logarithms, and exponential (scientific) notation operations. The calculator is needed for problem sets, quizzes, and exams. BRING IT WITH YOU TO EVERY CLASS AND LAB.

OTHER IMPORTANT DU RESOURCES

Disability Services Program.
Provides accommodations at no cost to all qualified students.
http://www.du.edu/studentlife/disability/dsp/

Learning Effectiveness Program
Provides academic support services beyond basic academic accommodations.
http://www.du.edu/studentlife/disability/lep

The Health and Counseling Center.
Free and confidential
http://www.du.edu/duhealth/counseling/

Office of Student Conduct
Honor Code Statement: www.du.edu/honorcode
Student Conduct Policies and Procedures http://www.du.edu/studentlife/ccs/policies

What is in the air we breathe? What types of light may be harmful and why might they also be necessary? How do our actions effect the environment around us? What action can we take to improve the chemical environment around us? How does just one individual effect change on such a large-scale system like a watershed or Earth? In this course we will strive to answer many of these questions and more, then develop an understanding from a molecular level about such processes.

Overarching learning objective

Science and the understanding of fundamental scientific principles can help explain the complex natural system in which we live. The chemical principles to be cover during this course will help you to use the molecular/chemical world to explain the macroscopic world (the world readily observed around you).

Course overview

This is the first course of a three course series dedicated to understanding chemistry as it applies to the environment around and within us. This first course in the series is dedicated to air and water. In that context, we will learn about the gases and the substances which make up our atmosphere; ozone, sunlight and energy; water, salts, acids and bases. The information used in this first course will be the foundation for subsequent topics in the series.

Beside your involvement in the lecture component of this course, you are required to participate in the **laboratory component**. The laboratory is an important part of the course and experiments have been selected to support your learning of topics covered in the lecture. The laboratory work will solidify your study of chemistry through experimentation, data collection, and analysis.

Course goals

The course aims to improve your scientific understanding, more specifically your chemical literacy. At the completion of this course you will be able to:

- Articulate concepts and principles in chemistry and effectively apply scientific methods to ask questions, design and perform experiments, or judge arguments. Thereby increasing your ability to make better-informed decisions about science related personal and social issues.
- Recognize science as a process that considers uncertainty when drawing conclusions from scientific evidence and making predictions from existing data.
- Apply and distinguish between qualitative and quantitative forms of analysis and evidence, and demonstrate skills for using and interpreting quantitative information in various formats based on validation and replication of results.

As a team, we will work to achieve the above goals by:

• learning and using chemical terms,
• increasing your understanding of the chemical basis of many natural phenomena,
• developing data analysis and scientific thinking skills,
• applying your knowledge to identify and solve problems,
• developing your laboratory skills, and
• enhancing your scientific communication skills.

Content is important but learning concepts and ideas is essential. It is far more beneficial in the long run to learn how to **identify and apply unifying principles** to the ever-changing planet around us rather than to simply recall facts. In short, understanding concepts will enable you to grasp the big picture that you can fill in with new facts and details later in life when a new environmental or energy debate arises.

Soon, you will be experiencing the excitement of using chemistry to help understand the intricacies of the world around you!!!

How to be successful in this course:

Point Totals:

Quizzes/In Class exercises (8 best at 10 pts each)	80 pts
Clicker and Participation	60 pts
Connect Online Homework (8 best at 10 pts each)	80 pts
Laboratory (7 at 40 points each)	280 pts
In Class Exams (2 at 150 pts each)	300 pts
Final Exam	200 pts
Course Total	**1000 pts**

**I reserve the right to adjust point totals.

Quizzes/In-Class Exercises

The quizzes will cover recent material from both class and lab. In-class exercises may include group work. If more than eight assignments are given during the term, only your top eight will be counted.

Clicker/Participation

You must register your clicker online via the blackboard website. No score will be assigned based on answers being right or wrong. To earn the points from Clicker sessions, you must answer at least 75% of the questions posted.

With a clicker (transmitter), **EVERYONE CAN PARTICIPATE INSTANTANEOUSLY and WITHOUT PRESSURE.** Every time you click on the transmitter, the answer of your choice is communicated to my receiver. The combined answers can then displayed for everyone's viewing while you may remain anonymous to your peers. This helps your instructor determine the level of understanding of a given concept so that the teaching can be tailored to the class's needs.

Online Homework

Online homework sets will be assigned regularly using *Connect*. The homework problems will help you evaluate your understanding of the course material and they will provide you with review materials before exams. Your top eight scores will be counted.

Laboratory Reports and Worksheets

Lab work will make up about 30% of your grade.

- Lab reports are due to your TA at the BEGINNING of the following lab session.
- Pre-lab quizzes will be administered during the first 10 minutes of your lab and count toward your lab grade. No additional time will be provided for completing the quiz for late students.
- Materials for conducting each experiment will be available only during the week designated in the syllabus.

See Laboratory Information page below for further details.

Exams

Bring a calculator to all exams.

The dates for the three scheduled exams are:

- **Monday, Oct 1st - 12:00pm - 1:30 pm**
- **Monday, Oct 29th - 12:00pm - 1:30 pm**
- **FINAL**: **Monday, Nov. 19th - 12:00-1:50pm**

*note, I reserve the right to change these dates as necessary, and will notify you immediately of any modifications to the above dates.

There will be **NO makeup exams**.

Exams focus on the information covered since the beginning of the term or previous exam. However, *knowledge of chemistry is cumulative*, therefore material covered in earlier chapters will often be necessary to answer questions. The exams will include questions dealing with definitions, descriptions, and facts. They will also test your skills to explain concepts and ideas. Practice exams will be provided.

The final exam will cover the entire term.

Grade disputes are subject to policies of the Chemistry Department and initially must be directed to Prof. Kristensson.

Attendance/Preparation

- Students are expected to attend ***every*** class. Grades for class attendance are determined by your use of your Clicker response system, in class quizzes and exercises.

- You are responsible for obtaining all the handouts and other materials provided during the term. Check blackboard for supplementary information and notices.

- NO LAPTOPS DURING LECTURE. You will be notified in advance if laptops are needed during lab for data collection.

- It is expected that students have **read** the material that will be covered in the lecture **prior** to class. You are responsible for all material covered in class, including activities, demonstrations, and videos available online, in labs AND in the assigned readings.

- ***Be considerate of space and sounds in the classroom.*** Full attendance means that there will be almost no empty seats! Out of respect to your classmates, please observe the following rules during lectures:

    - Arrive on time, seated and ready to listen when the lecture begins. If an emergency causes you to arrive late, please enter quietly.
    - Do not begin to pack up your books before the class is over
    - Do not have conversations with your neighbor during lecture
    - **Turn off** your cell phone and pager

- Be consistent, thorough, and organized in your studying.

- Use your **Clicker** during class. You are required to **complete the online registration of your clicker by the second lecture** to receive credit for in class participation and attendance. If you have trouble registering, email me or come during office hours.

- Register on **Connect** to perform regular homework and get credit for it.

- Cell phone use of any type will not be permitted in class or during laboratories. This means you must bring a separate calculator with you for exams and quizzes. No headphone use during class or laboratories is permitted at any time.

- Classroom and any online discussions should be respectful to everyone and relevant to the topic we are discussing.

- Any disruptions in class will be addressed by the instructor according to the DU Code of Student Conduct. (See http://www.du.edu/studentlife/ccs/policies for more information about the conduct system.)

Important Registrar Deadlines: Last Day to Drop: Sept 16th. Last day to drop without approval: (W grade) Oct. 19th. Last day to drop with approval: Nov. 6th.

Expectations for Academic Integrity

The principles and penalties of the DU Honor Code and Academic Misconduct policy will be upheld. All exams and in-class quizzes are to be completed individually, unless specifically noted otherwise. I expect that all of your work for credit will be conducted with academic integrity. Any breach of academic integrity will receive a very strict penalty. If cheating occurs on any pieces of graded work, the minimum penalty will be an automatic grade of ZERO for that assignment. Falsification of data is a serious offense in research in any industrial or academic setting. I expect that each of you will promote academic integrity by reporting to me any breach of such, as prescribed by the Honor Code expectation for *Constructive Action* to take place. *Constructive Action* is defined as reporting any action contrary to the Honor Code to someone in a position to take action – such as a faculty member, Dean, Campus Safety officer, or administrator. Failing to take such action may result in a violation of the *Non-Action* policy.

It is encouraged for students to work in groups on suggested homework problems and for exam review. However, each student is required to do his/her own share of work. Discussion is allowed regarding homework assignments, but the final submitted answer must be your own (i.e. someone else *cannot* do your homework for you, including online work).

Academic Integrity summary:

Exams and quizzes: Completed individually without books, notes, headphones, or notes programmed into a calculator or other electronic device.

Online homework: You are encouraged to discuss the problems with your classmates, but the answers you enter are your own. Tutors or others are not permitted to enter nor feed you the answers.

Lab Reports: Fabricating information, such as data for a lab report is a violation of the Academic Integrity Policy. Lab experiments are conducted in pairs, each student must record their data on to their own worksheets or reports. Post lab questions must be completed individually.

Distractions

Students must respect the classroom environment. Laptops are NOT needed, nor are they suggested for use in the class. During lecture all cell phones and electronic devices shall be turned off. I reserve the right to answer any calls receive in the lecture hall. Unless specifically directed by the instructor, students shall refrain from sending email and instant messages, or from engaging in other activities (reading non-course materials, engaging in private conversations and so on) that disrespect the classroom environment and learning conditions for others.

Make-Up Work

If you must miss a class or exam, inform me **IN ADVANCE**. The only valid excuses for missing any assignment or class is illness (with a doctor's note and report from Office of Student Life), family emergency (must be reported to Office of Student Life), or valid University event (must have info from Athletics Office, etc.).

University Policy for Special Needs

Students with medically recognized and documented disabilities and who are in need of special accommodation have an obligation to notify the University of their needs. If you have emergency medical information to share with me, please make a confidential appointment with me as soon as possible. If you have questions concerning the services available for students with disabilities at DU (physical, psychological, learning disabilities, etc.) please contact Disability Support Services, so that your needs may be addressed. DSS is located on the 4th floor of Ruffatto Hall, 1999 E. Evans Ave. Official notification regarding disability conditions that may impair a student's academic performance must be communicated to me by DSS.

Labs are conducted in 15 Boettcher Center West. There are eight laboratory sections scheduled for 2 hr 50 min.
The lab will consist of

1) Pre-lab quiz (first 10-15 minutes)
2) In-lab work and data collection
3) Post-lab report and calculations. This varies depending on the lab, but may include a writing component.

You will be working with a lab partner unless otherwise notified. Experimental work will be done in **pairs**, with each member **participating equally** in the lab manipulations, data analysis, and questions. Data will be shared between you and your partner; however, **each student must complete their own assignments.** You may/should discuss pre-lab, in-lab, and post-lab work with your partner. **Include your partner's name on all lab assignments.**

Budget approximately an hour each for pre- and post-laboratory assignments. Some weeks may require a bit less time, and others a bit more. Familiarizing yourself ahead with each week's procedures by reading the assigned experiment and any supplementary information provided by the instructors will help you maximize your efficiency (and quiz score!). All experiments must be completed during their **assigned** lab period.

Lab reports are due at the beginning of the next laboratory session. No late lab reports will be accepted. A tentative schedule of laboratory classes is given at the end of this syllabus.

You must make every effort to attend every laboratory session. Do not be late to lab class as there is a strict limit on the amount of time available to perform the activity. If you arrive late you will not be given extra time to complete the assignment or quiz. If you are late you may be told you cannot commence the experiment. **There will be no makeup laboratory sessions**.

Instructor's initials are required prior to conducting the lab to show completion of pre-lab AND after the lab prior to leaving.

* Note, class quizzes are given during the first 10-15 minutes of the lab session (don't be late!).

LAB Safety

There is an element of hazard in every laboratory course. Safety will be covered as part of the first lab period.

You are REQUIRED to wear approved safety goggles while in the lab. These will be provided for you as you walk in the lab.

Clothing requirements:

No open toed shoes (shoes must cover the entire foot)

No bare legs

No loose or baggy clothing (nothing that will interfere with lab activity)

Long hair must be tied back

Goggles must be worn at all times.

If you are inappropriately dressed, you will not be permitted to attend the lab session for your own safety and the safety of others around you.

Pagers, cell phones, music players, and headphones of any kind may not to be used in the lab.

Food and drink are prohibited in the lab

Label all containers; unknown contents creates danger

Dispose of all wastes properly! No wastes should be dumped down the drain. Waste containers will be provided next to the dispensing hood. Read the label carefully to be sure you are adding waste to the correct container. If you are unsure of how to dispose of your wastes, ask your TA.

Leave no trace. Clean up after yourself! Wipe up all spills. Dispose of all trash. Wash all glassware. Ensure safety for everyone.

LAB: TENTATIVE SCHEDULE KRISTENSSON 2012 CHEM 1001

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SAT.
Sept 9	10	11	12	13	14	15
	No Labs until 9/17					
16	17	18	19	20	21	22
	Lab 1: Scientific Method and Measurement					
23	24	25	26	27	28	29
	Lab 2: Breath Lab					
30	Oct 1	2	3	4	5	6
		NO LABS				
7	8	9	10	11	12	13
	Lab 3: Absorption versus Emission: Plant Pigment					
14	15	16	17	18	19	20
	Lab 4: Sunscreen: UVB					
21	22	23	24	25	26	27
	Lab 5: Molecular Modeling and Colligative Properties					
28	29	30	31	1	2	3
	Lab 6: Chromatography/Conductivity					
4	5	6	7	8	9	10
	Lab 7: Acid Rain					
11	12	13	14	15	16	17
	Mandatory Review Session (No Lab)					
18	19	20	21	22	23	24
	FINAL EXAM		**Thanksgiving**			

LECTURE: TENTATIVE SCHEDULE KRISTENSSON 2012 CHEM 1001

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SAT.
Sept 9	10 Intro, Syllabus, Sustainability Ch 0	11	12	13 1.1, 1.6-7,2.2, 2.3 What is in a Breath?	14	15
16	17 1.12, 2.1, 1.2, 2.2, 2.3 What is Ozone?	18	19	20 1.2, 1.3, 1.4, 1.5 What Else is in Breath?	21	22
23	24 1.9, 1.10, 1.11 What Causes Pollutants? Chemical Change	25	26	27 1.14, 3.7 How do molecules scale to real life?	28	29
30	Oct 1 **FIRST EXAM**	2	3 **NO LECTURE**	4	5	6
7	8 2.1, 2.4-2.6 If Ozone is so bad, why protect it?	9	10	11 The electromagnetic spectrum and your printer or Cravolas	12	13
14	15 2.7-2.9 Sun screen, skin cancer, and CFCs	16	17	18 3.3 The Shape of things	19	20
21	22 Ch 5 solutes, ions, conductivity, concentration	23	24	25 Ch 5 Covalent and solutions, water treatment	26	27
28	29 **SECOND EXAM**	30	31	1 Ch 6 What is an acid/base?	2	3
4	5 Ch 6: Neutralization and pH	6	7	8 Ch 6: Sulfur dioxide and coal: Clean coal?	9	10
11	12 Ch 6: ACID DAMAGE	13	14	15 Sun, wind and rain…	16	17
18	19 **Final Exam**	20	21	22 **Thanksgiving**	23	24