I. COURSE DESCRIPTION
Course: CHEMISTRY 106 (3 credit hours)
Semester: FALL 2015
Sections: Sections 1-5
Instructor: Punit Kohli
Email: pkohli@chem.siu.edu
Office: Neckers 327
Textbook: Chemistry in Context Eighth Edition
Lecture Time: 1:00 pm - 1:50 pm MWF
TA: Scott Doudera
Lecture Location: Neckers 340/440
Office Hours: 2.00 pm – 3.00 pm and Monday (M), Wednesday (W) and Friday (F) and by appointment
Laboratory Time: Please see below for exact date, time, and lab locations.
Laboratory Location: Neckers 104 (it may change, I will announce it if there are any changes to the location).

NOTE: You can purchase an ebook (electronic text book) or hard copy. Please use the following link to explore this possibility. http://connect.mcgraw-hill.com/class/p_kohli_copyofchemistryincontextlibrarycourse There are other sites/sources that may allow you to purchase/acquire books cheaper. It is student’s decision to purchase an ebook or a hard copy of the text book and lab book and where/when to purchase the book.

***Everything on this sheet is subject to change without notice ***

Note to students: Eating, drinking, sleeping (or snoring), talking or any activity during lecture or lab that distracts or disturbs other students will not be tolerated. If you have something to say, then please raise your hand and say it loud and share with the whole class. These rules will be taken very seriously. Announcements regarding exam dates and changes in syllabus will be made prior to start of the lectures. The tentative dates for exams are provided below. It is therefore your advantages to attend and participate in the class.

Arithmetic and algebra: Some CHEM 106 students may discover that their arithmetic and algebra skills are in need of improvement. The students are expected to know and use simple arithmetic and algebra concepts. These concepts WILL NOT be covered in the class. Please review your algebra skills for this class.

Calculator: You must have your own scientific calculator during exams, labs, and home works. No graphing calculators or calculators that store equations or other data will be allowed. You will need your calculator for the exams and labs. Calculators will not be provided, and they may not be shared.

II. EXAMS and GRADING
There will be 7 exams and one final exam throughout the session. All the exams will be multiple-choice and will be of 50 minutes duration. The tentative dates of the exams are given below. The lowest exam grade will be dropped. Thus, best of six out of seven exams will be counted towards final grade. Each exam will worth 10%. There will be six labs during the course. Your lowest lab score will be dropped. Therefore, your best five scores out of six will be counted towards your final grade. Labs contribute 25% towards your lab grades. Your TA will provide you more information on labs and will also provide you grades on your labs.

Safety in the class and laboratory: Safety is utmost important both in lectures and labs. Detailed information on safety is given below (pages 5-6).

Exams Tentative Dates: 09/04, 9/18, 10/02, 10/16, 10/30, 11/13, and 11/23
Final Exam: The final exam will be of comprehensive and multiple-choice format. Any student who does not take the final exam will receive a zero for the final exam. The final exam is scheduled during the final
exam period as listed in the Final Exam Schedule on Salukinet. It will be a multiple-choice exam and is worth 15% of your grade.

Make-up Policy: Because you will be allowed to drop one exam and a lab, no makeups for any exams including final exam, or labs will be offered. If you miss an exam or a lab, that lab or exam will be will be dropped and will not be counted toward your final grade. No exceptions will be made. Under health or severe family emergency will you need an exemption from an exam or a lab, you must see and talk to me in person (no emails please). I will determine if you can be excused for an exam or a lab with proper paperwork and evidence.

Disputed Grades: You will have 48 hours after a score of an exam or final exam is posted on website for you to dispute that score on that particular exam. After that, all scores are final. Please do not come to me for changing the exam scores after above specified grace period.

No Lectures/Labs on: September 7 (Labor Day), October 10-October 13 (Fall break), November 11 (Veterans Day), and November 25-29 (thanksgiving).

Homework: There will be no graded homework. However, the students are strongly encouraged to work the problems and questions at the back of each chapter. The answers to many questions/problems can be found in the back of your textbook. If you need answers or solutions to any problem, please contact me through email.

Final Grade Scheme: Final grades will be evaluated by the following formula.
1. Best six (out of seven) exams of 10% each: Total is 60% towards final grade;
2. Laboratory (best five lab scores out of six): 25% towards final grade;
3. Final exam: 15% towards final grade.

You have 48 hours after a score of an exam or final exam is posted on website to dispute the score on that particular exam. After that your grades/exam or lab scores will be FINAL.

The course will not be graded on a curve; however, the following grade scale will be used for grades.

<table>
<thead>
<tr>
<th>GRADE</th>
<th>Final cumulative score (normalized to 100)</th>
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<tbody>
<tr>
<td>A</td>
<td>85-100</td>
</tr>
<tr>
<td>B</td>
<td>70-84</td>
</tr>
<tr>
<td>C</td>
<td>55-69</td>
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<tr>
<td>D</td>
<td>40-54</td>
</tr>
<tr>
<td>F</td>
<td>&lt;40</td>
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</tbody>
</table>

This grading policy will be strictly enforced. Changes in the grading policy are NOT negotiable. Please note the university policy regarding incompletes (INC) which states: An INC is assigned when, for reasons beyond their control, the students engaged in passing work are unable to complete all the requirements for the class. In other words, under no circumstances will an INC be given to a failing student to prevent the student from receiving an F.

Website: https://online.siu.edu/

There is a website for this course to which students will need to refer to receive important information. The website can only be accessed by students registered for the course. To log on to the website follow the instructions at the following link: https://online.siu.edu/. Information on the website will not be posted anywhere else, so you must become familiar with the website and use it to obtain this information. D2L which is actual platform that SIUC uses will provide you important information on this and other courses. This website will contain information on study guides, grades, and other announcements. Students can find their scores on exams/assignments on this website by logging in with their password. Grades pertaining to the laboratory section of the course will not be posted on the website but can be obtained from the laboratory TA.

Cheating/dishonesty policy: Any form of cheating/dishonesty will result in judicial proceedings in accordance with Southern Illinois University’s policy on academic dishonesty. Everyone/in anyone involved in cheating or dishonesty will be given ZERO for that particular exam/lab and under some circumstances the
any instance of cheating will also be reported to the Department Chair and the Dean of the College.

III. IMPORTANT NOTES
Unless announced otherwise, we plan to cover ~ 6-12 chapters and contemporary topics related to Chemistry and Society. This will, however, depend on the pace of the lectures and time constrains (exceptions will be announced in the class). Your textbook's title "Chemistry in Context, Eighth Edition" reveals overall format and contents of a typical CHEM 106 lecture, and on the scope of the entire class.

In CHEM 106 lectures, we will discuss (a) concepts of chemistry and (b) the applications of these concepts to everyday life. In other words, we will focus on chemistry and its impact on the society and policies. Therefore, a typical 50-minute lecture period will consist of a mix of "pure chemistry" topics (i.e. the periodic table, atoms, molecules, and bonds) as well as "chemistry context" topics (i.e. air pollution, global warming, acid rain, nuclear power issues, alternative energy sources as well as polymer- and nutrition-related issues in today's society). Your textbook will be an important source for "pure chemistry concepts" in CHEM 106 lectures. It is therefore to your advantage to (a) purchase the textbook; and (b) bring it to class each day. Your textbook will also be the primary source for "chemistry context" CHEM 106 material, but it is not the sole source.

I also plan to use multimedia (such as videos, movies, internet, webcasts, news paper, and class-room demonstrations) during the course of this class. More announcements will be provided in the class.

IV. CHEM 106 STUDENT LEARNING OBJECTIVES
Listed below are CHEM 106 Learning Objectives. In light of previous discussion in this syllabus, the objectives are categorized as "Pure Chemistry Learning Objectives" and "Context Learning Objectives". Depending upon the pace of the lectures and other time constrains, we plan to cover seven to eleven book chapters during this course. The sequence of chapters that will be covered during this course may be different from that is available in the text book. CHEM 106 Student Learning Objectives (chapter numbers and titles from "Chemistry in Context, Eighth Edition) and Lecture-Related Learning Objectives are following:

Chapter 1: The Air We Breath
Pure Chemistry Learning Objectives pertaining to Atoms & Molecules; the Periodic Table
Context Learning Objectives pertaining to Air Quality Issues in the 21st Century

Chapter 2: Protecting the Ozone Layer
Pure Chemistry Learning Objectives pertaining to the Electromagnetic Spectrum; Energy, Frequency and Wavelength
Context Learning Objectives pertaining to Chloroflourocarbons (CFCs) and their Contribution to Ozone Depletion

Chapter 3: The Chemistry of Global Warming
Pure Chemistry Learning Objectives pertaining to Drawing Molecules; the Concept of the Mole; Carbon Cycle Context Learning Objectives pertaining to Current Human-Related Activities that Contribute to Global Warming; the Future of Fossil Fuels

Chapter 4: Energy, Chemistry, and Society
Pure Chemistry Learning Objectives pertaining to Defining Energy Changes in Chemical Reactions and Bond Energies
Context Learning Objectives pertaining to Oil Refinery Operations and Currently-Used Reformulated Gasolines

Chapter 5: The Water We Drink
Pure Chemistry Learning Objectives pertaining to Commonly-Employed Concentration Units and Specific Heats
Context Learning Objectives pertaining to Comparisons of Tap Water and Bottled Water; Water Treatment Plant Strategies

*Chapter 6: Neutralizing the Threat of Acid Rain*
- Pure Chemistry Learning Objectives pertaining to Acidity, Basicity, and pH Scales;
- Chemistry of Combustion
- Context Learning Objectives pertaining to Clean Coal Technologies;
- Effects and Politics of Acid Rain

*Chapter 7: The Fires of Nuclear Fission*
- Pure Chemistry Learning Objectives pertaining to Isotopes; Nuclear Particles; Radioactivity and Nuclear Power Plants
- Context Learning Objectives pertaining to Hazards of Radioactivity; Effects and Politics of Waste Generated by Nuclear Power Plants and the Proposed Options to Dispose Nuclear Waste

*Chapter 8: Energy from Electron Transfer*
- Pure Chemistry Learning Objectives pertaining to Battery Operation; Oxidations and Reductions; Fuel Cells; Photovoltaic Cells
- Context Learning Objectives pertaining to Alkaline Batteries; Hybrid Vehicles; the Hydrogen Economy; Solar Energy Options

*Chapter 9: The World of Plastics and Polymers*
- Pure Chemistry Learning Objectives pertaining to Principles of Polymerization; Polyethylene and Polyamides
- Context Learning Objectives pertaining to "Paper or Plastic?" and the Origin of Plastics

*Chapter 10: Manipulating Molecules and Designing Drugs*
- Pure Chemistry Learning Objectives pertaining to An Introduction to Organic Chemistry
- Context Learning Objectives pertaining to Aspirin and Modern Drug Design; the Abortion Pill; Drug Testing and Approval

*Chapter 11: Nutrition: Food for Thought*
- Pure Chemistry Learning Objectives pertaining to An Introduction to Biochemistry; Carbohydrates, Fats and Proteins
- Context Learning Objectives pertaining to Cholesterol and Diet Issues; Vitamins and Minerals

*Chapter 12: Genetic Engineering and the Chemistry of Heredity*
- Pure Chemistry Learning Objectives pertaining to Genetic Engineering and Processes of life; Nucleic acid, Proteins and Enzymes
- Context Learning Objectives processes that makes possible

**Laboratory-Related Objectives:** The scheduled CHEM 106 experiments listed in the laboratory schedule are designed to be closely integrated with the CHEM 106 lecture topics. The collective objective of the CHEM 106 laboratory experience is for you to familiarize yourselves with the activities that working experimental chemists are engaged in. But the specific objectives of each experiment are closely related to the broader objectives of CHEM 106.

**Lecture-Related Objectives:** For example, successful completion of Experiment 1 (Gases) enables you to learn about the properties of atoms and molecules, from a laboratory perspective. The learning objective of Experiment 1 is, therefore, related to the Chapter 1 pure chemistry learning objectives. Similarly, Experiment 5 (Spectrometric Analyses) is closely related to a Chapter Two learning objective (the electromagnetic spectrum), while the subject of Experiment 8 (Moles) is identical to a Chapter Three pure chemistry learning objective. The remaining Experiments (6, 13, and 17) are related to lecture-related content from Chapters 2, 6, and 10, respectively.

V. LABORATORY DIRECTIONS FOR CHEMISTRY STUDENTS
SAFETY:

PLEASE NOTE THAT YOU WILL BE ASKED TO LEAVE THE LAB IF YOU ARE NOT PROPERLY OR INSUFFICIENTLY DRESSED FOR CONDUCTING LAB EXPERIMENTS AS OUTLINED IN THIS DOCUMENT.

IT IS STUDENT’S RESPONSIBILITY TO WEAR SAFETY GOGGLES AND APPROPRIATE CLOTHING WHILE WORKING IN THE LAB. YOU WILL NOT BE ABLE TO CONTACT EXPERIMENTS AND WILL NOT RECEIVE CREDIT FOR THE LABS WITHOUT GOGGLES AND APPROPRIATE CLOTHINGS IN THE LAB. YOU WILL BE ASKED TO LEAVE THE LAB IF YOU DO NOT FOLLOW THESE AND FOLLOWING RULES.

1. Before you start working in the lab, please note the locations of the fire extinguishers, eyewash station, emergency exits, and emergency shower.
2. YOU MUST WEAR SAFETY GOGGLES OR SAFETY GLASSES AT ALL TIMES IN THE LAB. Regular prescription glasses do not provide sufficient protection against chemicals in the lab. Avoid wearing contact lenses during labs.
3. Please wear proper clothing in the lab. Shorts or loose clothing are NOT ALLOWED during lab and when you are present in the lab.
4. Please confine long hair. Footwear should completely cover the top of the foot—NO SANDALS WILL BE ALLOWED.
4. Please wear protective gloves as directed by your TA.
5. NO EATING OR DRINKING OR CHEWING IN THE LAB AT ANY TIME. You are NOT allowed to bring food, snacks (including chew gums), and drink in the lab. No smoking in the building is allowed at any time.
6. Please assume all unfamiliar chemicals are dangerous. Please do not handle them if you have suspicion or have doubts about chemicals.
7. Report any accidents to the TA immediately. Chemicals spilled on your skin or in your eyes should be flushed with copious amounts of water. The TA will arrange for transportation and medical attention.
8. Experiments in which flammable, toxic or noxious chemicals are used should be performed in the fume hood as directed by the TA.
9. If a student is pregnant, she should notify the TA about this issue. Some chemicals may have dangerous effects during pregnancy.
10. Regularly check your glassware for chips or cracks; discard broken or chipped glassware in the special containers available in the lab. Do NOT throw them in regular trash containers. The broken glassware should be discarded in the proper containers assigned for glass and other sharp objects.
11. Please do not smell, inhale, or consume food and chemicals while in the lab. If you have (a) medical condition(s) that require(s) you to take medicine/food, please let your TA know about this. You may take your medicine/food outside of the lab.

General Laboratory Procedures and Rules:

1. You are only allowed to work as assigned by your TA. You MAY NOT work without supervision.
2. Your TA will provide instructions at the beginning of each lab period concerning waste disposal. Don't dump/throw anything down the drain or put anything in the trash unless you are specifically told to do so.
3. Discard excess reagents into proper containers. Never return them into the reagent bottles. Don't put pipettes into the reagent bottles.
4. Use distilled water when directed.
5. At the end of each lab period, please clean up after yourself. Wipe up spills; re-cap reagents; DO NOT leave trash on the countertops, in the sink or on the floor.
**Individual Apparatus:**

1. During the first lab period, please check the contents of your locker against the list provided. Immediately replace any missing or broken apparatus. This replacement is **FREE ON THE FIRST DAY ONLY**. Therefore, carefully check each and every glassware and other content of your locker. After this check, you will pay for replacing any apparatus that you break or lose during the semester. You will pay for purchasing the items from the stockroom using a blue slip. You will be billed through the Bursar’s office.

2. Special equipment or apparatus needed for a single lab period may be checked out of the stockroom using a green slip. Please return this equipment at the end of the lab period. If it is not returned, you will be charged for it.

3. All apparatus is the property of the Department of Chemistry and Biochemistry, Southern Illinois University, Carbondale, IL and may not be removed from the premises.

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I have read the above rules and agree to abide by them. I understand that if I fail to do this I will not be allowed to participate in the laboratory.

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**Lab Schedule:** Please note that you will perform six experiments in the lab. They are: *Investigation 1; Investigation 6; Investigation 8; Investigation 10; Investigation 14; and Investigation 19.*

Please note that there are no make-ups, so please pay attention to exact dates given below.

- **Section 1:** Neckers 104, Mondays, 10 am - 12.50 pm on 08/31, 09/14, 09/28, 10/19, 11/02, 11/16
- **Section 2:** Neckers 104, Mondays, 2 pm - 4.50 pm on 08/31, 09/14, 09/28, 10/19, 11/02, 11/16
- **Section 3:** Neckers 104, Wednesdays, 10 am - 12.50 pm on 09/02, 09/16, 09/30, 10/14, 10/28, 11/18
- **Section 4:** Neckers 106, Tuesdays, 2 pm - 4.50 pm on 09/01, 09/15, 09/29, 10/20, 11/03, 11/17
- **Section 5:** Neckers 104, Thursdays, 8 am – 10.50 am on 09/03, 09/17, 10/01, 10/15, 10/29, 11/12

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**VI. EMERGENCY PROCEDURE**

Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. Because some health and safety circumstances are beyond our control, we ask that you become familiar with the SIUC Emergency Response Plan and Building Emergency Response Team (BERT, http://www.bert.siu.edu/) program. Emergency response information is available on posters in buildings on campus, available on BERT’s website at www.bert.siu.edu, Department of Safety’s website www.dps.siu.edu (disaster drop down) and in Emergency Response Guideline pamphlet. Know how to respond to each type of emergency.

Instructors will provide guidance and direction to students in the classroom in the event of an emergency affecting your location. It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency. The Building Emergency Response Team will provide assistance to your instructor in evacuating the building or sheltering within the facility.

The Department of Public Safety (DPS) has a comprehensive website outlining procedures for various emergencies, including an active shooter as was asked yesterday, as well as a variety of contact information. Their website is here http://www.dps.siu.edu/ Please be sure to look over their emergency procedures and be sure to program appropriate numbers in your phone in the event of an emergency.
EMERGENCY RESPONSE GUIDE

CAMPUS EMERGENCY
911
Department of Public Safety
Non-Emergency 453 DPST (3771)
www.dps.aisu.edu

INSTRUCTIONS FOR INDIVIDUALS WITH DISABILITIES

IF YOU ARE IN DANGER OF OR ARE A VICTIM OF CRIMINAL Activity, DO NOT CONTACT THE POLICE OFFICER. CALL 911 IMMEDIATELY AND FOLLOW THE INSTRUCTIONS PROVIDED BY THE POLICE OFFICER.

POLICE EMERGENCY

IF YOU ARE A WITNESS TO A CRIME OR ENCOUNTER A SUSPECTED CRIMINAL, CONTACT THE POLICE DEPARTMENT IMMEDIATELY.

POWDER WARNING

IF YOU ENCOUNTER A PACKAGE WITH A SUSPECTED POWDER, CALL 911 IMMEDIATELY AND FOLLOW THE INSTRUCTIONS PROVIDED BY THE POLICE OFFICER.

STORM WARNING

IF YOU ARE IN A STORM, SEEK OUTDOOR SHELTER OR BRAVE THE STORM IN YOUR VEHICLE. FOLLOW THE INSTRUCTIONS PROVIDED BY THE POLICE OFFICER.

THREAT WARNING

IF YOU ENCOUNTER A SUSPECTED THREAT, CALL 911 IMMEDIATELY AND FOLLOW THE INSTRUCTIONS PROVIDED BY THE POLICE OFFICER.

TERRORIST THREAT

IF YOU ENCOUNTER A SUSPECTED TERRORIST THREAT, CALL 911 IMMEDIATELY AND FOLLOW THE INSTRUCTIONS PROVIDED BY THE POLICE OFFICER.

WEAPON THREAT

IF YOU ENCOUNTER A SUSPECTED WEAPON THREAT, CALL 911 IMMEDIATELY AND FOLLOW THE INSTRUCTIONS PROVIDED BY THE POLICE OFFICER.