CHEMISTRY 106
SPRING 2015

I. COURSE DESCRIPTION

Course: CHEMISTRY 106 (3 credit hours)
Sections: Sections 1-5 TA: Scott Doudera
Instructor: Dr. Venney Wong
Email: venney@siu.edu
Office: Neckers 146G
Office Hours: By appointment
Textbook: Chemistry in Context Eighth Edition
Lecture Time: 3:00 pm - 3:50 pm MWF
Lecture Location: Neckers 340/440
Laboratory Time: Please check your lab schedule below (it will also be available on D2L)

***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. It is therefore your advantage 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.

Lab Schedule: @Neckers 408
**Pay attention to the EXACT date of your lab sections.

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<tr>
<th>Dates</th>
<th>Exp #1</th>
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<th>Exp #8</th>
<th>Exp #10</th>
<th>Exp #15</th>
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<td>Sections 1</td>
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<td>Sections 2</td>
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<td>Sections 5</td>
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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 20% 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.

Tentative Exam Dates: (Feb 2, Feb 16, Mar 2, Mar 23, Apr 6, Apr 20, May 4)

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 to be on Friday, May 15, 2015 2:45pm – 4:45pm (Neckers 440). It will be a multiple-choice exam and is worth 20% of your grade.

Make-up Policy: Because you will be allowed to drop one exam and a lab, no makeups (for exams, final exam, or labs) will be offered. If you miss an exam or a lab, that lab or exam will be will be dropped. No exceptions will be made.

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. *Because the Final exam is on a Friday afternoon, PLEASE check your grades on the weekend because grades will have to be finalized by Monday afternoon.

No Lectures/Labs during spring break: Mar 9 – Mar 13

Homework: There will be no graded homework. However, students are strongly encouraged to work the problems and questions at the back of each chapter. Answers to many of these problems can be found in the back of your textbook.

Extra Credit: Completed notes taken during lectures throughout the semester.

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): 20% towards final grade;
3. Final exam: 20% 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.

GRADE     | Final cumulative score (normalized to 100)
A         | 85-100
B         | 75-84
C         | 60-74
D         | 45-59
F         | <45
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, 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/](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/](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. Important information will be posted on this website such as study guides, grades, and other announcements. Grades – Students can find their scores on exams on the 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.) Laboratory Information – Students can find information about the laboratory component of the course.

**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/anyone involved in cheating or dishonesty will be given ZERO for that particular exam/lab and under some circumstances the student(s) will be given F in the class. 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 chapters 1-12. 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") is revealing in terms of the 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 those 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, bonds and electrons) 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 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, Seventh 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 Chlorofluorocarbons (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 & 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 6 (Spectrometric Analyses) is closely related to a Chapter Two learning objective (the electromagnetic spectrum), while the subject of Experiment 10 (Moles) is identical to a Chapter Three pure chemistry learning objective. The remaining Experiments (8, 15, and 19) are related to lecture-related content from Chapters 2, 6, and 10, respectively.

V. LABORATORY DIRECTIONS for CHEMISTRY STUDENTS

**Safety:**
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. Do not wear contact lenses.
3. Please wear proper clothing in the lab. Shorts or loose clothing are NOT ALLOWED working in the lab. Please confine long hair. Footwear should completely cover the top of the foot—NO SANDALS. 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.
4. Please wear protective gloves as directed by your TA.
5. NO EATING OR DRINKING IN THE LAB AT ANY TIME. You are NOT allowed to bring food, snacks (including chew gums), drink in the lab. No smoking in the building.
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 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.
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 the TA. You MAY NOT work without supervision.
2. The TA will provide instructions at the beginning of each lab period concerning waste disposal. Don't dump anything down the drain or put anything in the trash unless specifically told to do so.
3. Discard excess reagents. 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**. After that, you will have to 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.

I understand that if I fail to check my equipment back in at the end of the semester on or before the last scheduled lab class, I will be billed $20.00 plus any applicable equipment replacement fees. 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.

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.
EMERGENCY RESPONSE GUIDE

EVACUATION

When building evacuation is ordered, fully cooperate with Public Safety and
• Remain on a safety, orderly manner via the closest exit.
• Help others who need assistance.

ACTION SHOOTER

If someone has entered a building and started shooting, the following are actions that one should consider if you find S.W.A.T. vehicles:
1. Call the building immediately only. If it is S.W.A.T. tell so.
2. Safety instructions may vary. Follow them and exit the building immediately.
3. Call 911.
4. If you are NOT inside S.W.A.T. immediately exit the building and do not enter it.
5. Do not be the reason you are arrested.
6. Close and lock doors. If there is a lack on the doors, try to use lead to lock the door or block the door with something.

CHEMICAL SPILL

• Isolate the spill area.
• Remove contamination clothing.
• Move away with vapor for at least 10 minutes.
• Do not remove from clothing until after it is called off.

BOMB THREAT

• Dispose of as much information as possible.
• Do not open the package.
• Do not open the package.
• Do not attempt to call 911.
• Notify S.W.A.T. to evacuate the building.

TORNADO WARNING

• Follow Shelter-In-Place instructions.
• Stay away from windows.
• Do not leave your building unless instructed to do so.
• Do not attempt to evacuate.
• Report the threat.
• Use an all-clear bell when safe.

Campus Emergency

911

Department of Public Safety
Non-Emergency 453-6051 (3771)
www.cps.siu.edu

SMELTER-IN-PLACE

Follow the instructions given by your S.W.A.T. evacuate according to the instructions.
1. Go to basement, lowest floor of the building or designated shelter area.
2. Take personal belongings.
3. Stay away from windows and doors.
4. Shutter in place with your 911 to mention that is (close to a gun).

IF YOU ARE RESPONSIBLE FOR AN END-_USER (SMELTER) SEND A COPY OF DANGEROUS WARNING (TAKE IT WITH YOU)

BUILDING SHELTER

TENT ACTION PLAN

• Call all the doors, at least, take any machine, hold on and move with it.
• Enter yourself in a room in a location where a door or several doors can be closed.
• Cover against an external wall and move or stand in a corner just.
• Return to all other doors.
• Open a window to signal for help.

EARTHQUAKE

• Be prepared.
• Be aware of your surroundings.
• Be familiar with your shelter.
• Be familiar with your shelter.
• Be familiar with your shelter.

MEDICAL EMERGENCY

• Call 911.
• Avoid any emergency and get help.
• Do not move the person unless the person is in danger.
• Be familiar with bodies and bodies.

INSTRUCTIONS FOR INDIVIDUALS WITH DISABILITIES

BEFORE AN EMERGENCY

• Isolate Public Safety of your circumstances and request a brief meeting to discuss our emergency response to any communications needed.
• Find a way to determine your “standby” rate and eventually publish the event of an emergency.
• Develop a one-page plan, one message before available and the plan beforehand.

DURING AN EMERGENCY

• If you are not available, call 911 and tell the others your name and what you are needed.

POLICE EMERGENCY

If you know the crime is in progress, call 911.
• Request written or check the police officer.

DO NOT Attempt to APPROACH or INTERVIEW WITH A CRIMINAL EXCEPT IN DANGEROUS.

• If it is safe to do so, try to get a detailed description of the criminal.
• If the criminal enters a vehicle, note the license number.

LETTER/PACKAGE

• Call 911.
• Do NOT handle the package.
• Leave the room and close the door.
• Wipe hands.
• Identify suspect and call the name in contact.
• Do not go to the emergency room.