

Chemistry and the World
Chemistry 111
Spring 2008

Course Instructor: Greg Muth, SC 372, x3106, muth@stolaf.edu

Course Meeting Times: Tuesdays 9:35-11:00
Thursdays 9:30-10:50

Lab Meeting Time: Tuesdays 11:45-2:45

Office Hours: to be announced

Text: *Foundations of General, Organic and Biochemistry*, 1st Edition by Denniston and Topping, McGraw-Hill Publishers

Required Materials: scientific calculator (must have logarithms)
lab manual*
safety goggles*

*these items are available through the Chemistry Department (see posted signs for sales times)

Student Learning Goals:

- that you learn the roles of chemistry in the world around us
- that you learn how experiments answer scientific questions
- that you learn some of the fundamental chemical concepts, such as atomic/molecular structure, solution concentrations, and acid/base chemistry, nomenclature and structure/function relationships
- that you learn the skills to handle the quantitative nature of chemistry
- that you will hone your problem solving skills

Keys to success:

- Read before coming to class
- Actively participate during class time
- Review each lecture immediately after each class
- Use problems in the book as practice tests
- Use frequent, intense 1 hour study sessions

Grading Criteria: Your grades will be determined on the basis of:

Course Component	number	points each	Points	Percentage
In-class Exams	4	100	400	32
Laboratory Exercises	11	20	220	18
Homework sets from text	13	20	260	21
"Test Question" Assignments	7	10	70	6
"Check-ins"	4	10	40	3
"CPR"	17	5	85	7
Final exam	1	150	150	12
Total			1225	100

Typically, the final grades will distribute according to:

90-100%	A
80-89	B
70-79	C
60-69	D
0-59	F

I reserve the right to change this schedule at any time during the course, however lower limits for a particular letter grade will never be raised (e.g., the A range could be changed to 85-100, but never to 95-100).

Where you can get help:

My office hours will be posted shortly after the start of the term. You may also contact Prof. Muth by email with questions. Please note that the hour and minutes before the beginning of class are the most stressful for me. You may not find me the most receptive for questions at this time.

In addition, we have a chemistry student assigned to this course as a tutor and s/he will hold help sessions. The time and location of the help sessions will be announced shortly after the beginning of the term.

The academic support center: <http://www.stolaf.edu/services/asc/>

Additional support:

Any student with a documented intellectual, physical or emotional disability needing academic adjustments or accommodations is requested to speak with me during the first two weeks of class. All discussions will remain confidential. Students with disabilities must also contact Ruth Bolstad (bolstadr@stolaf.edu), Student Disability Services Specialist in the Academic Support Center (x3288) located in the modular village.

Homework sets from the text.

Problems from *Foundations* will be graded by the student grader according the following criteria. Each set contains approximately 10 problems and each problem has one or more parts. Each of these sub-parts will be weighted equally (say one point), no matter what their relative complexity is, and broken down as per:

- Complete, correct and supported answer – 100%
- Complete, but with multiple minor errors or very few major errors (a good attempt) – 50%
- Incomplete, with major errors, work not shown – 33%
- Not attempted, unreadable or too messy to follow – 0%

The individual parts of each problem will be scored this way, and the individual scores added to get a total (say 14 for a set with 8 problems and 2 parts per problem). This final score will then be expressed in terms of 10 points (here, for example, $14/16 = 0.88$ and $0.88 * 10 = 8.6$ points). In this way you will get the same amount of credit for working a simple problem as you do for working a hard one, making it a management decision on your part as to how much time to spend on any one problem, compared to another.

Homework assignments must be turned in on loose leaf (not spiral bound) standard sized paper. Multiple pages must be stapled (not paper clipped, not folded, not taped, etc.) together. There will not be a stapler in the classroom. Assignments must be readable and organized. Assignments will not be accepted if these rules are not followed.

Part of the learning objective with the homework assignment is the process of puzzling through the questions rather than arriving at the right answer. Effort and good problem solving strategies will be highly valued.

Your textbook has example and additional problems throughout the chapters. I encourage you to work on these as you read through the material. After you have studied the material, attempt the homework problems in as test taking practice. Doing so will improve your learning and allow you to score better on the exams.

Answers to homework assignments will be available outside my office and on closed reserve in the science library.

“Test Question” Assignments.

On indicated days during the semester you are to type out and turn in your version of a good test question generated from material covered in preceding days. This is your opportunity to take a proactive approach to the ever-persistent question, “What is going to be on the test?”

In addition to the question itself, you are to provide a one or two sentence rationale for your question (briefly explain your thoughts and motivations of your question i.e. why you think it is a good question).

Finally, provide a clear and concise answer to your question.

I will evaluate your "test questions" questions based on:

- clarity

- level of difficulty
- originality
- rationale for your question
- clear, concise and correct answer

You will receive 0-10 points for your question. During the next scheduled class period I may present one or two questions for discussion, other questions will be posted or used for practice. Questions must be turned in on standard 8 ½" x 11" paper and typed using a standard word processing program. Chemical structures must be generated using software available in the chemistry department.

Critical Thinking, Puzzling and Reasoning (CPR)

During each class period we will take time to work on critical thinking skills, solving puzzles and exercise our minds using logical reasoning. The exercises we will conduct are related to the types of problems encountered during our study of chemistry. Because they relate to, but may not involve chemical concepts, I feel we can use these puzzles to sharpen our chemistry skills and work at a higher cognitive level. The eventual goal is to build confidence in our problem solving abilities as related to chemistry, other academic subjects and whatever else life throws at us.

The puzzles will be distributed during class. At the beginning of the following class period you are to turn in your "puzzle diary" the notes you created while working on the problem. Your puzzle diary should show how you are employing the traits and skills of good problem solvers (see below). I will be evaluating your diary with respect to the process you went through utilizing the skills of problem solving and how you worked over or around any obstacles. The process is far more important than the product.

Habits of "good" problem solvers	
Traits	Skills
Positive attitude	Doesn't self deprecate Shares ideas Has fun!
Concern for accuracy	Checks calculations, definitions Looks up words, terms, units Retests ideas, shows all work
Methodical	Breaks down problem into parts Stops and solves each part Reads carefully and re-reads multiple times
Fearless	Hypothesizes and guesses Brainstorms Thinks outside the box
Active	Thinks out loud, works with others Draws pictures, diagrams, figures Writes relationship sentences
Perseverant	Makes adequate time to spend on the problem Makes multiple attempts Seeks resources as needed

"Check ins":

The week prior to each exam, I'd like the opportunity for a 5-10 minute meeting with each of you to discuss how the class is going. I will be asking you to make an appointment with me so we can talk about your ideas and concerns (if any). You are required to bring your class notes, homework, test questions, lab manual and other course related materials for easy reference.

Feb. 21-27: Check in #1

Mar. 13-19: Check in #2

Apr. 10-16: Check in #3

May 1-7: Check in #4

Punctuality is highly valued for all assignments. Penalties will be assessed based on the following:

- Handed in by the start of class on the due date = no penalty
- Handed in between zero and one class periods late = -50%
- Handed in more than one class period late = -25%

Please make arrangements to turn in your work prior to an absence.

Get out of jail free

Today you will receive one "get out of jail free" card. You may only use you card one time to receive a 24-hour extension on the due date for any assignment or start of any exam. Work must be completed and turned-in or begun, in the case of an exam, within the 24-hour window of extension. The intension of the card is to give you a brief reprieve from an overbooked exam day or hectic homework schedule. The card must be signed and turned in on time in place of the assignment or exam either personally or by proxy. The card may not be used for laboratories. Lost, stolen or damaged cards will not be replaced. Cards may not be traded or sold. You need not use the card for excused illnesses or a college sanctioned absence. The card is not transferable to other courses. The card has no cash value. No purchase necessary. Void where prohibited.

