

CHE 111: Chemistry in the Natural World

Block 6 2004-05

Craig M. Teague, Ph.D.

West Science 313

Office: x4312

Home (cell): 360-4019, a local call from Mount Vernon; call until 10 pm or so

CTeague@cornellcollege.edu

Office hours: MWF 11-noon; MTWF at 3; and by appointment

These office hours are a minimum; feel free to stop by my office anytime.

Course goals

In this block we will study how chemistry impacts everyday life and current issues in our society. To do this, we need to discuss several concepts that have widespread application in chemistry: matter; chemical bonding and structure; water; acids and bases; and energy. We will then apply these concepts to see how they influence our everyday life in areas such as the chemistry of life, food, and the home. In addition, we will discuss issues and problems we face as a society. These include acid rain, the decisions to use nuclear and solar energy, and the protection of water and air quality. We will see that chemistry plays a central role here.

Texts and other materials

Required:

Chemistry: A World of Choices, 2e, by Kelter, Carr, and Scott

A scientific calculator (able to do exponential notation; graphing not necessary)

Safety goggles (available in the chemistry stockroom for \$5)

Optional:

Student Study Guide with Selected Solutions for the text

Meeting times, format, and expectations

We will meet each day from 9:00-11:00 am and from 12:30-3:00 pm. On some occasions we may meet at 1:00 pm instead of 12:30 pm. Class will be a mixture of lecture, discussion, group work, problem solving, and laboratory work. Active participation in class is expected, and you will get more from the class if you are more involved. Labs will be taught by Charles Halsey and will be interspersed within the lecture material in a workshop format. In other words, labs will not necessarily be at one specific time only. More details regarding the labs will be handed out separately.

Reading the text more than once is strongly recommended. Ideally, you would read the appropriate sections of the text, we will discuss the material in class, and then you would reread the same sections again. Plan to spend a substantial amount of time reading and working problems; included in the schedule below are representative homework problems. Although these problems will not be collected or graded, it is to your great advantage to work and understand all of these problems. We can discuss and work through these problems in class, and I will post a homework answer key for each chapter's problems.

Point distribution and explanation

Mini-assessments, class participation, group work, attendance		50
Quizzes	10@10	100
Laboratory	lab grade scaled to:	250
Two midterm exams	2@100	200
Exam reworks	2@20	40
Presentation		160
Final exam		200
Total		1000

Mini-assessments: At the end of a class session, I will often ask you to write down one or a few questions you have regarding the material covered so far. I will then often begin the next class session by addressing one or more of these questions. There are no ‘stupid questions.’ Class participation and group work: If you participate fully in class and in small group work you will receive these points. This includes asking questions of your peers during their presentations. Attendance: I expect prompt attendance at all class sessions, but I will not explicitly take attendance most days and attendance will not specifically count in the grade. Exceptions: you must attend when your classmates are giving presentations and when we have guest speakers. Failure to attend during these times will result in a reduction of your grade. The points in this entire subsection are nothing more than an effort grade.

Quizzes: These will be short, in-class problems to work for credit. Most days will begin with a quiz over the previous day’s material.

Labs: In addition to the weighting shown above, you must perform satisfactorily in the lab portion of the course to pass the course.

Midterm exams: These will cover a specific portion of the course.

Exam reworks: I will collect and grade exam problems that you missed. It is very beneficial for you to do these reworks immediately, and the due dates for the exam reworks will reflect this. In addition, this should serve as extra incentive to study well for exams; the less you miss on the exam the fewer reworks you need to do. If someone aces an exam then s/he automatically gets full credit for the reworks!

Presentation: You will present topics from the latter part of the text (or other appropriate topics). You will have a fairly large amount of flexibility here. More details will be handed out soon, and we will discuss this aspect of the course in depth at that time.

Final exam: The final exam will be comprehensive, but the material in the latter portion of the course (since Exam 2) will be weighted more heavily to provide balance to all material covered.

Extra credit: If you find a legitimate error in the textbook and are the first student to report this error to me in writing, you will receive bonus points. The number of bonus points will be dependent on how many errors the class finds as a whole throughout the entire block. This offer is good for the text only (i.e., not the study guide).

Grading

Cutoffs will be no higher than:

A-/B+	900
B-/C+	800
C-/D+	700
D-/F	600

Cutoffs may be lower depending on the difficulty of the exams.

Miscellaneous

- Tutors are available; please see me for more information.
- Students wishing to drop on the 15th day must have faithfully attended and participated in class. This includes labs, quizzes, and exams.
- Any student with a disability or other situation which could affect your learning (e.g., serious family trouble) is urged to contact me soon, ideally the first or second day.
- Late work will not be accepted, and makeup exams or quizzes will not be given. If you need to miss class, let me know ahead of time; if the reason is good the assignment in question may be excused at my discretion.
- Working on problems and labs together is appropriate. However, academic and scientific misconduct will be dealt with harshly. Examples include, but are not limited to, ‘collaborating’ on exams or quizzes, illegal material stored in your calculator, submitting another’s work as your own (including copying from a current or former student’s lab handouts), and falsification of lab data. Any question about what is (or is not) appropriate in academia or science should be directed to me. If there is any doubt at all then please ask.

Schedule

The following schedule is tentative; deviations will be announced in class.

Day	Chapter	Topic	Representative Problems
1 M 31 Jan	Prelude; 1	Fundamentals	Ch. 1: 10,12,22,25,33,36,38,40,42
2 T 1 Feb	2	Connections	2: 1,2,5,8,11,13,16,28,30,46,53,61
3 W 2 Feb	3	Bonding	3: 4,8,14,22,30,32,34,36,44,50
4 R 3 Feb	6	Structure	6: 5,8,10,15ab,18,24,25,26,29, 36abe,42,44
5 F 4 Feb	4	Recycling, equations	4: 8,9,12,14,18,20,26
6 M 7 Feb	Exam 1 (9-11 am); optional PowerPoint tutorial (1:30 pm)		
7 T 8 Feb	7	Water	7: 7,11,14,19,26,27,28
8 W 9 Feb	8	Acids and bases	8: 7,8,12,13,16,18,30,38,40
9 R 10 Feb	11	Gases	11: 2,14,15,17,18,20,22,27,38,43
10 F 11 Feb	5	Energy	5: 2,11,14,25,27,28,31,38,40
11 M 14 Feb	Finish material		
12 T 15 Feb	Exam 2 (9-11 am); guest speaker (1:30 pm)		
13-16 W 16 Feb-M 21 Feb	Presentations: applied topics (problems from here on TBA)		
17 T 22 Feb	Finish presentations and review		
18 W 23 Feb	Final exam (9am-noon)		