

1 | Chemistry 108 Fall 2014

General Chemistry 108	5 credit hours
Lectures:	MWF 12:05 pm, 1361 Chemistry
Lecturer:	Teresa Larson, PhD
Office Hours:	By appointment only Office 4343 Chemistry
Contact Information:	tclarson@wisc.edu

Required Course Materials

- **Chemistry in Context, 8th edition**
Cathy Middlecamp, Michael Mury, Karen Anderson, Anne Bentley, Michael Cann, Jamie Ellis, Kathleen Purvis-Roberts
American Chemical Society
McGraw-Hill, 2015
- **Laboratory Manual for Chemistry 108**
Cathy Middlecamp and the General Chemistry Staff
Published through the UW-Department of Chemistry, 2009
NOTE: This manual is sold at the Alpha Chi Sigma table outside our lecture hall.
- **Laboratory safety goggles**
- **A non-graphing calculator** :You will need a scientific calculator for use on exams. Graphing calculators and cell phones are **NOT** permitted.
- **iClicker for lecture participation**

Course Philosophy

Chemistry in Context operates on a "**need-to-know**" basis. As a student, you will not be asked to learn a chemical concept just for the sake of learning it. Rather, you will learn what you need to know in order to understand a real-world issue. If there is no "need-to-know," then the topic is not covered. Students who have taken other chemistry courses with no connection to a real-world issue may find this approach disconcerting. But the authors of your textbook (with the backing of the American Chemical Society) believe that you will best engage in learning chemistry if it is connected to your life and the real world. Hence the *Chemistry in Context* approach.

In this course, you will study real-world issues that hopefully catch your interest and engage you over the course of the semester, if not for a lifetime. In order to understand and respond thoughtfully to the issues we examine, you must understand certain chemical principles as well as be able to think through complex issues that may not have easy answers. Therefore, a primary learning objective for Chemistry 108 students is to view these real-world issues through the lens of chemistry; in other words, to learn how to "think like a chemist."

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Your Role in Chemistry 108

Participation

Your steady efforts are needed. As this is a five-credit course, you can expect that it will require at least 15 hours each week. Seven of these hours will be structured: 3 in lecture, 2 in laboratory, and 2 in discussion section. You will need additional time to prepare for lecture and discussion section, to complete assignments, and to study for quizzes and exams.

Collaboration

UW-Madison has excellent students. In Chemistry 108, expect to learn from your peers and to form friendships that may last long after the semester ends. You will have many opportunities to work together: in discussion section, in lab, and even in lecture. Sometimes you will work in small groups of two or three people; sometimes the groups will be larger. Many of your future professions require teamwork, so work with us to develop the communication skills that you will need.

Your Voice

As an instructor, I value my students' feedback and want to establish a direct line of communication. For this reason, I would like to assemble a Student Board that meets with me for roughly 45 minutes as needed to discuss issues related to Chemistry 108. The board will be comprised of **one** student per discussion section. If your schedule is open at **1:00pm on Wednesdays (right after lecture)**, and you are interested in representing your discussion section, please let your TA know as soon as possible. Our first meeting will be at **1:00pm on Wednesday, September 10th**.

Learn@UW

Chemistry 108 uses Learn@UW as its online course management system. Be sure to visit our course site frequently to access readings and study questions for quizzes and exams, pre-lab quizzes, short assignments, grades, and the "News of the Week."

Respect

Given the size of our lecture, it's important that we all follow some basic etiquette rules. Please do not engage in other activities (such as texting, talking, surfing the web, watching videos on your computer, reading the newspaper, etc.) during lecture or discussion, as these activities are disruptive and distracting to those around you. **The use of cell phones is strictly prohibited in the lecture hall, and the use of laptops is restricted to following lecture slides and note taking.**

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Grading in Chemistry 108

- On occasion, you will be given a **short assignment** to complete outside of class. Please turn these assignments in *before lecture* on the date specified in the table below. Each assignment is worth 20 points. If you turn it in more than 10 minutes after the start of lecture, you will **lose 5 points** (we do it this way so that people do not work on the assignments during lecture). If for some reason you must miss lecture or know you will be late, hand in the assignment ahead of time. Additional information about late policies can be found on each assignment when it is posted on Learn@UW.
- **Quizzes** in Chemistry 108 will be held each Monday in lecture except when exams are scheduled. Check Learn@UW each week for study questions. Nine quizzes will be given during the semester, each worth 20 points. You drop your lowest quiz score; so **only 9 quizzes will count**. Quizzes will be given on the following Mondays:
 - September 8, 15, 29
 - October 6, 13, 27
 - November 3, 10, 24
 - December 1
- **Exams** will be held in class on Monday every three to four weeks, each worth 100 points. You drop your lowest exam score; so **only 3 exams will count**. Exams from previous years are available on the web, but please use these past exams with care. Each year the topics and the exam content cut-off points are a bit different. Also, the keys sometimes contain typos. Students in past years have strongly asked us to post these, so we do. But again, please use them with care. Exams will be given on the following Mondays:
 - Monday, September 22
 - Monday, October 20
 - Monday, November 17
 - Monday, December 8

If you have an excused absence we will schedule an **EARLY** quiz/exam for you. Excused absences include university-sanctioned events or school related obligations. Excused absences do **NOT** include taking a long weekend. **Please notify Dr. Larson at least one week in advance of your need to schedule an early exam or quiz.**

If unexpectedly you must miss a Monday quiz because of a serious injury / illness, and if you contact both your TA and Dr. Larson before Monday's class, and if you talked with nobody about the quiz, we will arrange a **LATE** quiz for you. **Serious injury or illness means you require medical attention.** Proof of medical attention will be required to make up a missed exam or quiz.

****Remember, you will drop your lowest quiz score AND your lowest exam score. This policy ought to give you the personal flexibility that you need when personal circumstances arise.****

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- A **pre-laboratory quiz** is available on Learn@UW for most of the laboratories this semester. Each pre-laboratory quiz is worth 10 points, and is due before you begin your lab each week.
- **Laboratory** is held each week. You will be awarded up to 10 points for each completed laboratory experiment. Content from the laboratory also will appear on exams. **Note: If you miss two laboratory experiments, you automatically fail the course.**
- The **final exam** will be held **Wednesday, December 17, 2013 at 7:45 am**. The time and date is **not negotiable**, as the university policy states that your exam may NOT be rescheduled for a reason such as holiday travel plans or family plans (if in doubt, ask your Dean). If you have three or more exams scheduled within a 24-hour period and wish to reschedule your chemistry exam, please talk to Dr. Larson before Thanksgiving.

A **point system** is used in Chemistry 108 to assign grades. You earn points for a variety of activities:

9 Quizzes	180 points	20 points/quiz
3 Hour Exams	300 points	100 points/exam
6 Short Assignments	120 points	20 points each
12 Pre-lab quizzes	120 points	10 points/week
13 Laboratory Experiments	130 points	10 points/week
Final Exam	200 points	
TOTAL	1050 points	

If for some reason a point earning opportunity is added or one does not take place, the scale will be adjusted accordingly.

Again, to pass the course you must not have missed 2 laboratory experiments. Assuming that this is true, your grade will be assigned using these cutoff points:

A	93.0 – 100%
AB	88.0 – 92.9%
B	83.0 – 87.9%
BC	78.0 – 82.9%
C	70.0 – 77.9%
D	60.0 – 69.9%
F	Below 60.0%

Grades are *not* assigned on a curve and you are *not* competing with your classmates for a grade. I reserve the right to lower the grade cut-offs, but these cut-offs will NOT be raised.

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Date	Lecture Number & Topic	Assignments & Assessments	Readings	Suggested Practice Questions
Week 1 W Sept 3	1: Course introduction & Overview		Chapter 0-skip section 0.5 Chapter 1: Sections 1.6, 1.7	Ch. 0: 3, 6, 9, 12 (try myfootprint.org), 16 Ch. 1: 13, 14, 15
F Sept 5	2: What would you see if you were the size of a neutron?		Chapter 1: 1.9 Chapter 2: 2.2 Chapter 7: 7.4	Ch. 1: YT 1.15; 18 Ch. 2: YT 2.4, 2.7; 11, 12 Ch. 7: YT 7.13, 1,3,4, 16, 17a, 18, 19
Week 2 M Sept 8	3: How do radioactive substances behave?	Quiz 1	Chapter 5: 5.6, 5.7 Chapter 7: 7.4	Chapter 5: YT 5.15, 5.16, 5.17, 5.18; 17, 18 Read Lab manual: Po-210 lab
W Sept 10	4: What happens when radiation hits you?	Short Assignment 1: "Lake Study" Due in lecture at noon	Chapter 2: 2.4 Chapter 7: 7.6 Chapter 11: 11.8, p. 476	Ch. 2: CT 2.11; YT 2.12; 16, 19 Ch. 7: CT 7.17, YT 7.12, 7.14, 7.18; 37, 38, 39, 51 Ch. 11: CT 11.19
F Sept 12	5: Here today, gone tomorrow...?		Chapter 7: 7.8	Ch. 7: YT 7.25, 7.26, 7.27; SC 7.29; 17,21,22, 34
Week 3 M Sept 15	6: The big difference between U-238 and U-235	Quiz 2	Chapter 7: 7.2	Ch. 7: YT 7.6; 5, 6, 7,8,9,10,11, 26, 27, 47, 48, 49
W Sept 17	7: Radiation in our world		Chapter 7: 7.1, 7.3, 7.5, 7.7, 7.9, 7.10	Ch. 7: YT 7.13, 7.23; 12, 13, 15, 23, 55, 57, 58
F Sept 19	8: What is "clean air"?		Chapter 1: 1.1, 1.2, 1.3, 1.5, 1.8, 1.9, 1.10	Ch.1: CT1.1, 1.10; YT 1.6, 1.7, 1.11,1.13,1.17; 3, 6, 7, 8, 15, 17, 20, 21, 23
Week 4 M Sept 22		EXAM 1		
W Sept 24	9: What have humans always done?		Chapter 1: 1.3, 1.10, 1.11 Chapter 6: 6.7, 6.8, 6.10	Ch. 1: YT 1.17, 1.19; CT 1.18, 1.23; 4, 11, 12, 16, 18, 30, 32 Ch. 6: 32, 33, 44,
F Sept 26	10: Ozone where you live		Chapter 1: 1.4, 1.12	Ch. 1: CT 1.23, 1.24, 1.25, 1.26; 38, 42
Week 5 M Sept 29	11: Sunglasses & Sunburns Part 1	Quiz 3	Chapter 2: 2.4, 2.5	Ch. 2: CT 2.11; YT 2.12, 2.13, Also see Dr. Larson's practice problem handout; 16, 19,
W Oct 1	12: Sunglasses and Sunburns Part 2	Short Assignment 2: "Smog City" Due in lecture at noon	Chapter 2: 2.5, 2.6 (Table 2.4), 2.7	Ch. 2: YT 2.14, 2.18; CT 2.17; 21, 39, 41,

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Date	Lecture Number & Topic	Assignments & Assessments	Readings	Suggested Practice Problems
F Oct 3	13: Seeing things... Electron Pairs and bonds		Chapter 2: 2.2, 2.3	Ch. 2: YT 2.5, 2.8, 2.9, 2.10; 13,14, 15, 38
Week 6 M Oct 6	14: Seeing things... Electron Pairs and bonds	Quiz 4	Same as Oct 3	Same as Oct 3
W Oct 8	15: The Ozone Hole		Chapter 2: Intro, 2.1, 2.6, 2.8-2.10	Ch. 2: YT 2.2, 2.16, 2.23; CT 2.15, 2.22; 1, 5,7, 22, 28, 29, 48
F Oct 10	16: CFCs, Cl atoms, and Stratospheric Ozone		Chapter 2: 2.6, 2.9	Ch. 2: YT 2.24, 23, 26, 31, 33, 43, 44, 47, 56
Week 7 M Oct 13	17: What should we do about the ozone hole?	Quiz 5	Chapter 2: 2.11, 2.12, 2.13	Ch. 2: 24, 25, 35, 49
W Oct 15	18: Why don't CFCs wash out in the rain?	Short Assignment #3 due: Molecular Models	Chapter 3: 3.3 Chapter 5: 5.1	Ch. 3: CT 3.7; YT 3.8, 3.9; 11, 13 Ch. 5: YT 5.3; CT 5.4; 5, 6, 8, 15, 33, 35, 36
F Oct 17	19: pH of Solutions		Chapter 5: 5.2, 5.5, 5.6, 5.9 Chapter 6: 6.1-6.4	Ch. 5: YT 5.5, 5.14, 5.21; CT 5.6; 9, 13, 24, 25, 26, 31, 52 Ch. 6: YT 6.1, 6.2, 6.4, 6.5,6.6, 6.7,6.9; CT 6.3, 6.8; 1-3, 6, 7, 8, 12, 13, 14, 16, 26-29,
Week 8 M Oct 20		EXAM 2		
W Oct 22	20: Acid Rain		Chapter 6: 6.5-6.8; 6.10- 6.13	Ch. 6: YT 6.13, 6.17, 6.19, 6.21, 6.22, 6.25, 6.28; 20, 22, 23, 34b, 36, 37, 38, 39, 42, 44, 46, 47
F Oct 24	21: Burning a gallon of gasoline		Chapter 3: 3.6-7	Ch. 3: YT 3.14, 3.15, 3.17; 4, 24, 39
Week 9 M Oct 27	22: Burning a gallon of gasoline, cont.	Quiz 6	Chapter 4: 4.4 (p. 166-7) Chapter 10: 10.2	Ch. 4: 6, 10, 11, 12, 13, 24, 25, 50 Ch. 10: YT 10.4, 10.5, 10.6, 10.7; 3, 4, 5, 31
W Oct 29	23: From Crude oil to Gasoline		Chapter 4: 4.2 (p.160), 4.4- 4.8	Ch. 4: YT 4.11, 4.13, 4.16, 4.17, 4.18 ; CT 4.15; 14,15-22,26-28, 35,44-48, 52, 67, 68
F Oct 31	24: Greenhouse gases: windows of the Earth		Chapter 3: 3.1, 3.2, 3.4, 3.8	Ch. 3: YT 3.2, 3.3, 3.5, 3.19; CT 3.10, 3.21; 2, 3, 7, 8, 9, 15-19, 28, 36, 37, 41, 45, 46
Week 10 M Nov 3	25: A global view of global warming & climate change	Quiz 7	Chapter 3: 3.2, 3.9-3.11	Ch. 3: YT 3.23, 3.25, ; 5, 27, 40, 42, 43, 50
W Nov 5	26: The Carbon Cycle	Short Assignment #4 Due: IR Spectra	Chapter 3: 3.5	Ch. 3: YT 3.11, 3.31 Ch. 4: 40
F Nov 7	27: What's all that stuff doing in my gasoline?		Chapter 4: Review 4.7	Ch. 4: 51, 55, 66, 67

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Date	Lecture Number & Topic	Assignments & Assessments	Readings	Suggested Practice Problems
Week 11 M Nov 10	28: Crude oil: Too valuable to burn?	Quiz 8	Chapter 9: 9.1-9.5	Ch. 9: YT 9.3, 9.10; CT 9.5, 9.6, 9.9, 9.11; 1, 2-8, 9, 11-15, 17, 23, 31-37, 44, 48, 53
W Nov 12	29: From polyethylene to polyester	Short Assignment #5 due: Carbon Footprint	Chapter 9: 9.6, 9.8-9.11 Chapter 10: 10.3	Ch. 9: CT 9.13, 9.14, 9.24, 9.29; YT 9.15, 9.20, 9.26, 9.30; 18, 20, 26, 30, 38, 40, 43, 47, 48, 49 Ch. 10: YT 10.8, 10.9; 6-8, 10-14, 16, 20, 22
F Nov 14	30: From polyethylene to polyester		Same as Nov 12	Same as Nov 12
Week 12 M Nov 17		Exam 3		
W Nov 19	31: Nylon		Chapter 9: 9.7	Ch. 9: YT 9.15; 19, 25
F Nov 21	32: The food we eat		Chapter 11: 11.8-11.11	Ch. 11: CT 11.15, 11.23, 11.30; SC 11.20; YT 11.21, 11.22, 11.25; 1, 3-9, 29, 32, 33, 46, 55
Week 13 M Nov 24	33: Sugar in soft drinks	Quiz 9	Chapter 3: 3.5 Chapter 11: 11.5, 11.6	Ch. 11: YT 11.11, 11.13; 19-23, 51, 52, 53, 54, 55 Ch. 4: 31, 32
W Nov 26	34: Fat is GOOD		Chapter 11: 11.3, 11.4	Ch. 11: YT 11.5, 11.6, 11.7; CT 11.8, 11.9, 14-18, 34-37, 39, 40, 57
F Nov 28	THANKSGIVING BREAK			
Week 14 M Dec 1	35: Biodiesel	Quiz 10	Chapter 4: 4.10	Ch. 11: CT 4.23, ; 29, 33, 34, 48, 53, 54
W Dec 3	36: Biodiesel	Short Assignment #6 due: Chemistry and Nutrition	Same as Dec 1	Same as Dec 1
F Dec 5	37: From Nylon to Hamburger		Chapter 11: 11.6, 11.7 Chapter 12: 12.5	Ch. 11: YT 11.14; 11-13, 24, 25-28, 43, 56 Ch. 12: 12.13; CT 12.14
Week 15 M Dec 8		Exam 4		
W Dec 10	38: From Nylon to Hamburger		Same as Dec 5	Same as Dec 5
F Dec 12	39: Final Exam Review			

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Additional Course Policies

Students with Special Needs: All UW-Madison students are entitled to an accessible, accommodating, and supportive teaching and learning environment. I strive to create an inclusive learning environment for all of my students. If you have special circumstances that may affect your performance in this course, please contact me as soon as possible at the beginning of the semester to arrange accommodations. Any information you share will remain strictly confidential.

Counseling Help: A wise professor once said that 99 % of human beings will require the aid of social counsel at least once in their lifetime. College is an important time in your life, and if you are struggling with personal issues such as stress management, drug or alcohol abuse, or coping with daily activities, I strongly encourage you to contact the University Counseling and Consultation Services. For more information, visit their website at http://www.uhs.wisc.edu/home.jsp?cat_id=36, call 265-5600, or stop by 115 N. Orchard Street. Hours are Monday, Tuesday, Thursday and Friday from 8:30 a.m. to 5 p.m. and Wednesdays from 9 a.m. to 5 p.m.

Academic Misconduct and Cheating: All UW-Madison policies regarding ethics and honorable behavior apply to this course. Academic dishonesty, including any form of cheating, is regarded as a very serious offense and may result in a failing grade in this course. In an examination or quiz setting, unless the instructor gives explicit prior instructions to the contrary, violations of academic integrity shall consist of any attempt to receive assistance from written or printed aids, from any person or papers or electronic devices, or of any attempt to give assistance, whether the student doing so has completed his or her own work or not. Other violations include, but are not limited to, any attempt to gain an unfair advantage in regard to an examination, such as tampering with a graded exam or claiming another's work to be one's own. Failure to comply will lead to sanctions against the student in accordance with the Policy on Academic Misconduct at UW-Madison (<http://www.wisc.edu/students/saja/misconduct/misconduct.html>). Please read the student information at <http://students.wisc.edu/doso/students.html> so you are aware of your responsibilities related to academic misconduct.

One final suggestion: pace yourself! All too frequently, students get exhausted and then fall ill midway in the semester. Although there are many models for success, a tried-and-true method is to work steadily over the course of the semester. This course will be structured to encourage this type of participation.