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CHMY 104.00: Preparation for Chemistry

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CHMY 104 – Preparation for Chemistry
Autumn 2015

Instructor:

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Email: **gerald.olbu@umontana.edu**
Office hours: MW 1:10 – 2:00, F 2:10-3:00, or by appointment
Information will be posted on Moodle

Prerequisite:

The ability to use algebra: rearrange equations, work with fractions, and be able to calculate logs and exponents. If your algebra skills are weak, please master them prior to attempting CHMY 104. You should be *eligible to enroll* in MATH 117 or higher to satisfy the math prerequisites for this course.

Course Description:

An introduction to chemistry specifically designed to prepare you for CHMY 141. A major theme of the course is to introduce you to looking at the universe at the atomic/molecular level.

There are two goals with respect to your intellectual development:

- Development of your procedural knowledge. Chemists often use skills such as mathematical pattern recognition, and the creation and manipulation of physical/mental models of atomic-level phenomena. You will develop your thinking patterns commonly used by chemists/scientists through linking algebra and general chemistry.

- Development of your content knowledge. This is knowledge of facts, theories, laws, and other information associated with chemistry.

Required Materials:

- The course textbook: Cracolice, M. S.; Peters E. I. Basics of Introductory Chemistry: An Active Learning Approach, 6th edition; Brooks/Cole: Belmont, CA.
- Cengage OWL online homework.
- Single-line display scientific calculator. Your calculator needs to be able to handle logs and exponents.

Lecture:

This class meets MWF 12:10 – 1:00 in SS 352. Each lecture will start with a ten-minute quiz based on the most recent previous lecture. Then time will be used to introduce new material and to work on problems in peer-led groups. This last part is based on the idea that active students learn more efficiently than passive students. A traditional lecture is a passive way of learning. To make it more active, we will use a portion of the lecture time to solve problems in peer-led groups during the so-called breakout questions.

Online Homework (OWL):

OWL online homework is required and will count for 150 points. Typically, problems will be assigned for each chapter and will be due two lecture periods past the end of that particular chapter. The assignments will be worth 6 points for each lecture day devoted to that chapter. See schedule for details. There are 186 possible points and the top 150 points will be used in your grade. The homework isn't due until the due date, but it is highly recommended that the homework be completed promptly.

Quizzes:

At the beginning of each lecture, a ten-minute quiz will be given. The quiz will cover material from the previous lecture. Each quiz is graded on a 6-point scale. To allow for illness, emergencies, and other legitimate reasons to miss class, only the best 25 quizzes are used in the calculation of your final grade, for a total of 150 points.

Midterm Exams:

Four midterm exams will be given during this course on dates specified on the calendar (see below). Each midterm will cover the material discussed during the prior 8 lectures. Exams will be administered during the lecture times; therefore, students will not be allowed to take exams at alternate times.

Make-up Quizzes and Midterms:

No make-up **quizzes** are allowed. Only the top 25 of the 32 quizzes are used in the calculation of the course grade to account for special circumstances such as emergencies and illnesses.

Students who miss a midterm exam for legitimate emergencies or illnesses will be allowed to replace up to two midterm scores with the final exam score on that section.

Final Exam:

The final exam is given on December 18, Friday at 8:00 a.m. The final exam is a comprehensive exam that will cover all of the material addressed in class. The final is mandatory; you will be assigned a grade of **F** for the course if you do not take the final exam, regardless of your point total prior to the final exam.

Grades:

25 Quizzes	@ 6 points each =	150 points
25 Owl Homework	@ 6 points each =	150 points
4 Midterm Exams	@ 100 points each =	400 points
1 Final Exam	@ 300 points =	300 points
Total		**1000 points**

A	930 – 1000 points	A–	900 – 929 points
B+	870 – 899 points	B	830 – 869 points
B–	800 – 829 points	C+	770 – 799 points
C	730 – 769 points	C–	700 – 729 points
D+	670 – 699 points	D	630 – 669 points
D–	600 – 629 points	F	0 – 599 points

Midterm Grade Errors:

When midterm exams are returned, please check your exam for grading errors promptly. The answer key is posted the day following the exam on Moodle.

If you believe a grading error has occurred, write-up a request for re-grade clearly indicating the grading error. Attach the request to the front of your unaltered exam. Suspected grading errors must be submitted to the instructor in class *no later than one week* after the graded exam is returned.

Do not write on any material that has been graded and returned to you. Keep all graded materials until after final course grades are assigned.

Study Time:

A standard formula used in colleges and universities is to allow for two hours study time for each hour of lecture. Given that this is a three-credit course, there are three scheduled lecture hours per week and thus six hours per week outside of class, for a total of nine hours per week devoted to the course. (A standard load of 15 credits therefore results in a 45-hour school week.) This means that an "average" student should spend nine hours per week working on this course. Students who expect higher than average grades should expect to spend a higher than average amount of time studying for the course.

Disabilities:

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students (DSS). If you think you may have a disability adversely affecting your academic performance, and you have not already registered with DSS, please contact DSS in Lommasson 154. I will work with you and DSS to provide an appropriate accommodation.

Legal notices:

This course syllabus is not a contract; it is a tentative outline of course policies. Changes may be made before, during or after the semester at the instructor's discretion.

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the university. All students need to be familiar with the Student Conduct Code. The Code is available for review online at http://life.umt.edu/vpsa/student_conduct.php

Schedule:

Date	Lecture	Quizzes	OWL Homework
Aug 31, M	Course Introduction	Quiz	
Sept 2, W	Pre-Assessment	Quiz	
Sept 4, F	#1, Chapter 2.1-2.3 States of Matter	No quiz	
Sept 7, M	Labor Day Holiday	Quiz 1, Chapter 2.1-2.3	
Sept 9, W	#2, Chapter 2.4-2.6 Substances and Mixtures		#1, 2, & 3 Intro due (6 pts)
Sept 11,F	#3, Chapter 2.7-2.9 Electrical Charge, Chemical Equations	Quiz 2, Chapter 2.4-2.6	
Sept 14, M	#4, Chapter 3.1-3.3 Scientific Notation, Conversion Factors	Quiz 3, Chapter 2.7-2.9	
Sept 16, W	#5, Chapter 3.4-3.6 Metric Units, Sig Figs	Quiz 4, Chapter 3.1-3.3	Chapter 2 due (18 pts) #5 Math Review due (6 pts)
Sept 18, F	#6, Chapter 3.7-3.10 Temperature, Density	Quiz 5, Chapter 3.4-3.6	
Sept 21, M	#7, Chapter 4.1-4.3 Gases	Quiz 6, Chapter 3.7-3.10	
Sept 23, W	#8, Chapter 4.4-4.6 Gas Laws	Quiz 7, Chapter 4.1-4.3	Chapter 3 due (18 pts)
Sept 25, F	Review	Quiz 8, Chapter 4.4-4.6	
Sept 28, M	Midterm #1 Chapters 2-4		Chapter 4 due (12 pts)
Sept 30, W	#9, Chapter 5.1-5.4 Nuclear Atom, Isotopes	No quiz	
Oct 2, F	#10, Chapter 5.5-5.7 Atomic Mass, Periodic Table	Quiz 9, Chapter 5.1-5.4	
Oct 5, M	#11, Chapter 6.1-6.4 Nomenclature: Binary Compounds and Ions	Quiz 10, Chapter 5.5-5.7	
Oct 7, W	#12, Chapter 6.5-6.7 Nomenclature: Acids and Oxyacid Anions	Quiz 11, Chapter 6.1-6.4	Chapter 5 due (12 pts)
Oct 9, F	#13, Chapter 6.8-6.10 Nomenclature: Ionic Compounds and Hydrates	Quiz 12, Chapter 6.5-6.7	
Oct 12, M	#14, Chapter 7.1-7.3 Formulas, Moles	Quiz 13, Chapter 6.8-6.10	
Oct 14, W	#15, Chapter 7.4-7.5 Mass, Moles, Particles	Quiz 14, Chapter 7.1-7.3	Chapter 6 due (18 pts)
Oct 16, F	#16, Chapter 7.6-7.8 Percent Composition, Empirical Formula	Quiz 15, Chapter 7.4-7.5	
Oct 19, M	Review	Quiz 16, Chapter 7.6-7.8	
Oct 21, W	Midterm #2 Chapters 5-7		Chapter 7 due (18 pts)

Oct 23, F	#17, Chapter 8.1-8.5 Balancing Chemical Equations	No quiz	
Oct 26, M	#18, Chapter 8.6-8.10 Combination, Decomposition, Replacement Reactions	Quiz 17, Chapter 8.1-8.5	
Oct 28, W	#19, Chapter 9.1-9.4 Net Ionic Equations	Quiz 18, Chapter 8.6-8.10	
Oct 30, F	#20, Chapter 9.5-9.6 Redox Reactions	Quiz 19, Chapter 9.1-9.4	Chapter 8 due (12 pts)
Nov 2, M	#21, Chapter 9.7-9.12 Precipitation and Solubility	Quiz 20, Chapter 9.5-9.6	
Nov 4, W	#22, Chapter 10.1-10.2 Stoichiometry	Quiz 21, Chapter 9.7-9.12	
Nov 6, F	#23, Chapter 10.3-10.6 Percent Yield, Limiting Reactant	Quiz 22, Chapter 10.1-10.2	Chapter 9 due (18 pts)
Nov 9, M	#24, Chapter 10.7-10.9 Thermochemistry	Quiz 23, Chapter 10.3-10.6	
Nov 11, W	Veteran's Day Holiday		
Nov 13, F	Review	Quiz 24, Chapter 10.7-10.9	
Nov 16, M	Midterm #3 Chapters 7-10		Chapter 10 due (18 pts)
Nov 18, W	#25, Chapter 11.1-11.2 Light, Bohr Model	No quiz	
Nov 20, F	#26, Chapter 11.3-11.5 Quantum Model, Electron Configuration	Quiz 25, Chapter 11.1-11.2	
Nov 23, M	#27, Chapter 11.6 Electron Configuration, Periodic Trends	Quiz 26, Chapter 11.3-11.5	
Nov 25, W	Thanksgiving Holiday		
Nov 27, F	Thanksgiving Holiday		
Nov 30, M	#28, Chapter 12.1-12.4 Ionic & Covalent Chemical Bonds	Quiz 27, Chapter 11.6	
Dec 2, W	#29, Chapter 12.5-12.8 Polar & Nonpolar Bonds, Octet Rule	Quiz 28, Chapter 12.1-12.4	Chapter 11 due (18pts)
Dec 4, F	Review	Quiz 29, Chapter 12.5-12.8	
Dec 7, M	Midterm #4 Chapters 11-12		Chapter 12 due (12 pts)
Dec 9, W	Post-Assessment	Quiz	
Dec 11, F	Review for Final	No quiz	
Dec 18, F, 8 a.m.	Final – comprehensive	Dec 18, Friday, 8:00 a.m.	Normal classroom, SS352