

9-2014

CHMY 104.00: Preparation for Chemistry

Daniel J. Dwyer

University of Montana - Missoula, daniel.dwyer@umontana.edu

Let us know how access to this document benefits you.

Follow this and additional works at: <https://scholarworks.umt.edu/syllabi>

Recommended Citation

Dwyer, Daniel J., "CHMY 104.00: Preparation for Chemistry" (2014). *Syllabi*. 1346.
<https://scholarworks.umt.edu/syllabi/1346>

This Syllabus is brought to you for free and open access by the Course Syllabi at ScholarWorks at University of Montana. It has been accepted for inclusion in Syllabi by an authorized administrator of ScholarWorks at University of Montana. For more information, please contact scholarworks@mso.umt.edu.

CHMY 104 PREPARATION FOR CHEMISTRY AUTUMN 2014 SYLLABUS

Course web site :: Moodle

All lectures, quiz keys and midterm keys will be posted on Moodle.

Instructor

Dr. Daniel Dwyer, daniel.dwyer@umontana.edu, (406) 243-4432

Office: Chemistry 206

Office Hours

One hour before class or by appointment

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, 5th edition; Brooks/Cole: Belmont, CA.

- Cengage OWL online homework and e-book. Found at <http://www.cengage.com/owl/>
- A, single-line display scientific calculator. Your calculator needs to be able to handle logs and exponents.

Lecture

MWF 12:10 PM – 1:00 PM, 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)

The online homework for the week will be assigned during lecture on each Monday. The online homework is required and will count for 15% of your grade. There will typically be three homework assignments each week, one for each lecture. They must be completed by midnight the following Sunday in order to receive credit for the assignment. The homework can be done anytime during that week but it is **highly recommended that the homework be completed before the next lecture**. There will be 33 homework assignments but only the top 25 scores will be counted.

Quizzes

At the beginning of each lecture, a ten-minute quiz will be given. Each quiz will have two questions. The questions will be drawn from the homework questions assigned from the textbook, or from the breakout questions discussed during the previous lecture in peer-led groups.

When a lesson is focused on the numerically oriented concepts, the quiz questions will be very similar to the homework questions only with the compounds and/or numbers changed. When the lesson is more conceptually oriented, the quiz questions will be derived to test your grasp of the learning objectives.

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 250 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 8-9 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. 7 of the 32 quizzes are not 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 the date and time specified by the Registrar.

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 =	<u>300 points</u>
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

569 or more points required for CR for those using CR/NCR option

A grade of audit (AUD) is recorded for all students who register in courses as auditors, intending to listen to the courses without earning credit or being graded. Any student who initially enrolls as an auditor or changes his or her grade option to audit (on or before September 21st) may listen to the entire course or any part thereof

at their discretion and will be issued a final grade of AUD.

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 electronic reserve at <http://eres.lib.umt.edu>. Barring emergencies, exams are returned at the end of the lecture following the exam. If you believe a grading error has occurred:

(a) Write-up a request for re-grade clearly indicating the grading error.

(b) 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.

The instructor will return your re-grade request to the original grader, who will explain why their original assessment was correct or s/he will adjust your grade if an error did occur.

Graders are allowed to adjust your grade up or down or make no adjustment.

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.

Drops

September 17th by 5:00 PM is the last day to drop the class without W on your transcript. Also, this is the last day to switch to Audit.

October 31st is the last day to drop with the signatures of your advisor and the instructor with W appearing on your transcript. After October 31st, you have made the decision to stay in the course until the end. After this date, you must have documented justification of a circumstance beyond your control to drop the course. This includes accident, illness, family emergency, etc.

Disabilities

Any student in this course with disability, which may prevent the student from fully demonstrating his or her abilities, should contact the instructor personally as soon as possible so necessary accommodations can be discussed to ensure full participation.

Academic Honesty

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

Grading Philosophy

An “A” student is someone who can solve homework-like problems under exam conditions with near-100% accuracy and can demonstrate the understanding of the major course concepts through the correct solution of application questions on exams, and who can successfully solve novel problems on exams.

A “B” student is someone who can solve homework-like problems under exam conditions with near-100% accuracy and can demonstrate the understanding of the major course concepts through the correct solution of application questions on exams, but struggles with novel problems on exams.

A “C” student is someone who can solve **most** homework-like problems under exam conditions and can demonstrate the understanding of the major course concepts through the correct solution of most application questions on exams, and has a demonstrable understanding of the major concepts of the course.

A “D” student earns a passing grade. Thus a demonstrated understanding of the major concepts of the course is required. This includes the ability to solve most homework-like problems on exams.

A student who cannot demonstrate an understanding of the major concepts of the course through his/her performance on exams will not earn a passing grade.

CHMY 104 Autumn Semester, 2014

Date	Lecture	Quizzes	Owl Homework
Aug 25	Course Introduction		Intro to OWL 1-3
Aug 27	#1 Chapter 2.1-2.3 States of Matter	No Quiz	OWL Problems 2.1-2.3
Aug 29	#2 Chapter 2.4-2.6 Substances and Mixtures	Quiz 1 Chapter 2.1-2.3	OWL Problems 2.4-2.6
Sept 1	No Lecture – Labor Day Holiday		
Sept 3	#3 Chapter 2.7-2.9 Electrical Charge Chemical Equations	Quiz 2 Chapter 2.4-2.6	OWL Problems 2.7-2.9
Sept 5	#4 Chapter 3.1-3.3 Scientific Notation/ Dimensional Analysis	Quiz 3 Chapter 2.7-2.9	OWL Problems 3.1-3.3
Sept 8	#5 Chapter 3.4-3.6 Metric Units/Sig Figs	Quiz 4 Chapter 3.1-3.3	OWL Problems 3.4-3.6
Sept 10	#6 Chapter 3.7-3.10 Temp/Density	Quiz 5 Chapter 3.4-3.6	OWL Problems 3.7-3.10
Sept 12	#7 Chapter 4.1-4.3 Kinetic Theory Gases	Quiz 6 Chapter 3.7-3.8	OWL Problems 4.1-4.3
Sept 15	#8 Chapter 4.4-4.6 Ideal Gas Law	Quiz 7 Chapter 4.1-4.3	OWL Problems 4.4-4.6
Sept 17	#9 Review of Lectures 2-8	Quiz 8 Chapter 4.4-4.6	Study for Midterm
Sept 19	Midterm #1; Chapters 2-4		
Sept 22	#10 Chapter 5.1-5.4 Nuclear atom/ Isotopes	No Quiz	OWL Problems 5.1-5.4
Sept 24	#11 Chapter 5.5-5.7 Atomic Mass/ Periodic Table	Quiz 9 Chapter 5.1-5.4	OWL Problems 5.5-5.7
Sept 26	#12 Chapter 6.1-6.4 Nomenclature/Binary Compounds/ Ions	Quiz 10 Chapter 5.5-5.7	OWL Problems 6.1-6.4
Sept 29	#13 Chapter 6.5-6.7 Nomenclature/Acids and Oxyacid Anions	Quiz 11 Chapter 6.1-6.4	OWL Problems 6.5-6.7
Oct 1	#14 Chapter 6.8-6.10 Nomenclature/Ionic Compounds/ Hydrates	Quiz 12 Chapter 6.5-6.7	OWL Problems 6.8-6.10
Oct 3	#15 Chapter 7.1-7.3 Formulas/ Moles	Quiz 13 Chapter 6.8- 6.10	OWL Problems 7.1-7.3
Oct 6	#16 Chapter 7.4-7.5 Mass/Moles/Particles	Quiz 14 Chapter 7.1-7.3	OWL Problems 7.4-7.5
Oct 8	#17 Chapter 7.6-7.8 Percent Composition/ Empirical Formula	Quiz 15 Chapter 7.4-7.5	OWL Problems 7.6-7.8
Oct 10	#18 Review of Lectures 10-17	Quiz 16 Chapter 7.6-7.8	Study for Midterm

Oct 13	Midterm #2 Chapters 5-7		
Oct 15	#19 Chapter 8.1-8.5 Balancing Chemical Equations	No Quiz	OWL Problems 8.1-8.5
Oct 17	#20 Chapter 8.6-8.10 Combination/Decomposition Replacement Reactions	Quiz 17 Chapter 8.1-8.5	OWL Problems 8.6-8.10
Oct 20	#21 Chapter 9.1-9.4 Net Ionic Equations	Quiz 18 Chapter 8.6-8.10	OWL Problems 9.1-9.4
Oct 22	#22 Chapter 9.5-9.6 Redox Reactions	Quiz 19 Chapter 9.1-9.4	OWL Problems 9.5-9.6
Oct 24	#23 Chapter 9.7-9.12 Precipitation and Solubility	Quiz 20 Chapter 9.5-9.6	OWL Problems 9.7-9.12
Oct 27	#24 Chapter 10.1-10.2 Stoichiometry	Quiz 21 Chapter 9.7-9.12	OWL Problems 10.1-10.2
Oct 29	#25 Chapter 10.3-10.6 Percent Yield Limiting Reactant	Quiz 22 Chapter 10.1-10.2	OWL Problems 10.3-10.6
Oct 31	#26 Chapter 10.7-10.9 Thermochemistry	Quiz 23 Chapter 10.3-10.6	OWL Problems 10.7-10.9
Nov 3	#27 Review of Lectures 19-26	Quiz 24 Chapter 10.7-10.9	Study for Midterm
Nov 5	Midterm #3; Chapters 7-10		
Nov 7	#28 Chapter 11.1-11.2 Light /Bohr Model	No Quiz	OWL Problems 11.1-11.2
Nov 10	#29 Chapter 11.3-11.5 Quantum Model/ Electron Configurations	Quiz 25 Chapter 11.1-11.2	OWL Problems 11.3-11.5
Nov 12	#30 Chapter 11.6 Electron Configurations/ Periodic Trends	Quiz 26 Chapter 11.3-11.5	OWL Problems 11.6-11.9
Nov 14	#31 Chapter 12.1-12.4 Ionic/Covalent Chemical Bonds	Quiz 27 Chapter 11.6	OWL Problems 12.1-12.4
Nov 17	#32 Chapter 12.5-12.8 Polar/Nonpolar Bonds Octet Rule	Quiz 28 Chapter 12.1-12.4	OWL Problems 12.5-12.8
Nov 19	#33 Chapter 13.1 Valence electrons Lewis diagrams	Quiz 29 Chapter 12.5-12.8	OWL Problems 13.1
Nov 21	#34 Chapter 13.2 -13.4 Molecular Geometry	Quiz 30 Chapter 13.1	OWL Problems 13.2-13.4
Nov 24	#35 Chapter 13.5 -13.6 Intro to Hydrocarbons	Quiz 31 Chapter 13.2-13.4	OWL Problems 13.5-13.6
Nov 26	No Lecture – Thanksgiving Holiday		
Nov 28	No Lecture – Thanksgiving Holiday		
Dec 1	Review of Lectures 28-35	Quiz 32 Chap 13.5-13.6	Read Lecture Notes
Dec 3	Midterm #4; Chapters 11-13		
Dec 5	#37 Review for Final	No Quiz	
Dec 8	Final Exam @ 8:00-10:00 AM Room SS 352		