



Syllabus Chem 7

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COURSE BLOG	http://chemistry7.wordpress.com/
OFFICE HOURS	T/Th 9:30-11:00 or by appointment

COURSE DESCRIPTION The lecture class covers fundamental chemistry concepts and theories for science and engineering majors. Topics covered include atomic structure, the periodic table and properties of the elements, stoichiometry, introduction to aqueous solution chemistry, thermochemistry, electronic structure and chemical bonding, molecular geometry, intermolecular forces, and properties of gases and the condensed phases. This class is intended for undergraduate students majoring in science and engineering, those pursuing careers in the health professions, and others desiring a firm foundation in chemical principles.

PREREQUISITES Math 11 or Math 18a or consent of the Department of Chemistry.

COURSE OBJECTIVES: Upon completion of this course, students will be able to:

1. understand the scientific method and quantitative measurements in science;
2. use dimensional analysis with proper attention to units and significant figures;
3. name and classify inorganic compounds;
4. determine empirical and molecular formulas from experimental data;
5. understand and use the mole concept in the stoichiometry of reactions and solutions;
6. balance chemical equations and use stoichiometric relationships;
7. understand concept of concentration, molarity and dilution of aqueous solutions
8. identify different types of reactions and predict the outcome of these reactions;
9. apply gas laws and kinetic molecular theory to processes involving gases;
10. understand the first law of thermodynamics perform thermochemical calculations;
11. understand the basic concepts of quantum theory, the electron configurations of atoms, and periodic trends in atomic properties;
12. understand theories of chemical bonding, molecular geometry, valence shell electron pair repulsion theory, valence bond theory, and molecular orbital theory;
13. understand intermolecular forces that determine the physical properties of matter;
14. understand the relationship between chemistry, industry and society significant to the Philippines and the international community;
15. develop an appreciation of how chemistry forms the foundation of science and technology;
16. appreciate how chemistry can contribute to the Ateneo mission of 'Man For Others'.

READINGS AND MATERIALS: Textbook *Chemistry, The Molecular Nature of Matter and Change*, 4th Edition by Martin Silberberg (McGraw-Hill). This text is available at the Ateneo Book-

store. A calculator capable of powers, and exponential functions is also required. No programmable calculators, or cellular phone calculators are permitted for use during examinations.

EXAMS: There will be three departmental pre-final chapter examinations worth 100 points each. The format of the one-hour long exams will be multiple-choice in combination with long answer problems where work must be shown to receive credit. Unexcused absences from an exam will result in a grade of zero. Excused absences may arise from a serious illness, death or serious illness within the immediate family. *In all cases please note it is the student's must notify the instructor, or the Department Secretary (Phone: X-5620), prior to the Exam to be officially recognized as excused from the Exam.* Students who are not excused will receive a grade of zero and are not eligible for final exam exemption irrespective of their pre-final class standing.

QUIZZES: Unannounced pop quizzes and homework problem sets will be given and/or collected in class. The combined scores in these activities is worth equal to the value of an hour exam or 100 points. Roughly ten activities will be assessed or more if the instructor thinks it is necessary. Please note missed assignments can not be made up.

MAKE-UP EXAMS: An optional comprehensive pre-final examination worth 100 points will be given at the end of the semester. The Make-up Exam score may be used to replace a student's lowest hour Exam score. If a score lower than the three hour Exams is obtained on the make-up Exam, then the previous Exam scores will be maintained and not lowered.

EXEMPTIONS FROM FINAL EXAM A student who aspires to be exempt from the comprehensive final exam *is required to take the pre-final comprehensive exam.* If after the make-up exam a student pre-final comprehensive point tally is 457.5 points (or 91.5% of 500 total points) or higher, then that student will receive a grade of A and be exempt from taking the final examination. If the aspirant however, gets a combined score lower than 457.5 out of 500; he/she will have the lowest pre-final chapter examination mark replaced by the make-up score, but that student would have to take the final examination.

GRADING SYSTEM: A standardized cumulative point system based on a maximum of 600 total points will be used to compute a student's grade.

Task	Points
Quizzes/Homework	100
Exam 1-3	300
Make-Up	100
PRE-FINAL POINTS	500
Comprehensive Final Exam	200
TOTAL POINTS	600

GRADING SCALE: Non-exempt students letter grades will be determined by converting the % of total number of points earned (600 points possible as described above) to a letter grade as follows:

Percentage Points	Letter grade
91.5 - 100	A
86.5 - 91.4	B+
79.5 - 86.4	B
74.5 - 79.4	C+
67.5 - 74.4	C
59.5 - 67.4	D
0.00 - 59.4	F

CLASSROOM POLICIES:

- Absences, excused or otherwise, must not exceed nine (9) or a student will automatically receive a grade of W for the course.
- Please arrive to class on time and maintain a courteous classroom.
- The use of cellular phones and computers during lecture is strictly forbidden.
- Please complete assignments before the lecture as you will be called on to answer questions and solve problems.
- The teacher reserves the right to remove anyone from the classroom on the grounds of discourtesy to the teacher or to a fellow student.
- Academic dishonesty of any kind will be penalized and immediately reported to the Departmental Chair and could result in expulsion from the University. Your signature on exams and any other work submitted affirms that you understand the academic honesty requirement.
- If a student has a disability that interferes with learning, please see the instructor on a confidential basis so that a strategy can be devised to overcome whatever barriers might exist.
- Please see me if you are having problems with the course!

SCHEDULE AND ASSIGNMENTS: A tentative schedule is shown below. Students are expected to complete the assigned reading before class and to attend recitation to improve problem solving skills. Problem-sets will not be collected routinely except on those random occasions where it may be collected and counted as a quiz grade. You are encouraged to do all the homework problems and then some.

WEEK	CHAPTER	PROBLEMS
1-2	1 Keys To Chemistry	1,2,4-7,17,18,21-23,27-30,34,38,42,52,56-58,60-64,67,70,81,83
2-3	2 Components of Matter	1,2,4,13,14,16,18,20,24,27,34,38,40,45,50,53,54,57,58,61,68,70,73,76,82,88,89,90,96,100,103,113,118,128,151,152

4-5	3 Stoichiometry	1-3,5,7,11,13,16,18,25-27,29,33,35,37,42,44,46,50,51 58,59,61,64,71,76,79,82,84,93,97,99,100,104,111,112,118,119
5-6	4 Chemical Reactions	1-6,10,15,19,20,22,25,32,35,39,41,42,44,45,51,60,61,62,68, 71,83-86,95,98,111,116
6	1-4	Hour Exam 1 (July 22 or 24)
7-8	5 Gases	1,2,8,11,14,19,20,22,24,26,28,30,33,38,40,43,45,46,49,51,53, 55,57,58,62,80,82,85,88,94
8-9	6 Thermochemistry	1,5,8,11,12,17,19,22,23,31,35,38,39,41,46,47,50,53,57,59,60 61,63,68,70,75,81,85,93,106,109
10-11	7 Quantum Theory	2,7,11,13,14,37,39,43,45,48,49,51,53,55,57,59,64,85
11	5-7	Hour Exam 2 (Aug. 26 or 28)
12-13	8 Periodicity	6,7,9,11,13,15,19,21,24,26,27,29,31,33,35,37,39,41,46,48,53,55 57,59,63, 68,70,73,74,76,78,80,82,86,89
13-14	9 Bonding I	1,5,8-12,15,57,59,61,65,66
13-14	10 Shapes	1,3,5,7,10,11,13,14,16,19,21,22,23,24,27,29,33,34,36,38,39,41 42,44,50-55,57,58,62
15-16	11 Bonding II	1-8,19,20,21,25,38,40,44,46
16	8-11	Hour Exam 3 (Oct. 25 or 28)
17		Comprehensive Make-Up (Week of Oct. 5)
18		Comprehensive Final Exam, (Week of Oct. 12)

SUGGESTIONS AND FEEDBACK: As a means and method to help improve the instruction of Chemistry 7, all Chem 7 instructors will make use of the Student Assessment Learning Gain website (<http://www.wcer.wisc.edu/salgains/instructor/>) to ascertain feedback about the course at the end of the semester.