Chemistry 1 (Sections GG and HH) Course Syllabus for FS 2007

INSTRUCTOR: Dr. Terry Bone
234 Schrenk Hall, tbone@umr.edu, (573) 341-4420, http://web.umr.edu/~tbone

Lectures: G-3 Schrenk Hall, MWF 11-12…… (no lectures on 9/3, 11/19 through 11/23)
Office Hours: 234 Schrenk Hall, Tu-F 9-10 or with appointment ……. (no office hours on 9/3, 11/19)

TAs: Younquing Jiang (Recitation Sections **G1-G3**, **H1-FH3**)
345 Schrenk Hall, yj343@umr.edu, (573) 341-6177

Johnathan Harper (Recitation Sections **G4**, **H4**)
224 Schrenk Hall, jphhdc@umr.edu, (573) 341-6176

Recitations: Sections …… …… (no recitation on 11/20 and 11/22)

G1: 321 Schrenk Hall, Tu 9-10	**H1**: 321 Schrenk Hall, Th 9-10
G2: 321 Schrenk Hall, Tu 10-11	**H2**: 321 Schrenk Hall, Th 10-11
G3: 321 Schrenk Hall, Tu 11-12	**H3**: 321 Schrenk Hall, Th 11-12
G4: 139 Schrenk Hall, Tu 9-10	**H4**: 139 Schrenk Hall, Th 9-10

LEAD (LEARNING ENHANCEMENT ACROSS DISCIPLINES): …… (no LEAD on 9/3, 11/19 through 11/23)

> **CHEMISTRY LEAD TUTORING** and **CHEMISTRY LEAD CENTERS** provide unique, collaborative learning forums for students who wish to improve their understanding of chemical concepts and their mastery of chemistry skills. Both will have outstanding students, who have already finished their general chemistry classes, to assist you. During the LEAD Centers, a Chemistry 1 course instructor will also be there to help you.
>
> This is an excellent opportunity (and certainly **better than paying somebody else**) to get in contact with your peers, prepare for online homework assignments, and get a good understanding of chemical concepts and principles.
>
> To encourage your participation, student attendance will be recorded and taken into account for raising borderline grades at the end of the semester.

Faculty-based LEAD Center: 139 & 126 Schrenk Hall …… (starting 8/27)

M7-9pm (…,Dr. Woelk) T3-5pm (…,Dr. Schuman),
W7-9pm (…, Dr. Collier) Th3-5pm (…, Dr. Bone)

Drop-in LEAD Tutoring: 201 Norwood Hall ……(starting 8/28)

T7-9pm, Th7-9pm (…)

REQUIRED MATERIAL:

Textbook: Bruce Averill, Patricia Eldridge, ***Chemistry — Principles, Patterns, and Applications*** (Vol. 1) with online homework *MasteringGeneralChemistry* (student edition), ISBN 0-8053-8280-1
or: Bruce Averill, Patricia Eldridge, ***Chemistry — Principles, Patterns, and Applications***, (combined Vol. 1 and Vol. 2) with *MasteringGeneralChemistry* (student edition), ISBN 0-8053-8280-3799-7
——— Textbook and *MasteringGeneralChemistry* may also be acquired separately ———
Calculator: Scientific notation required, equation solving capabilities optional
Clicker: Personal response device registered at the UMR bookstore (Havener Center)

COURSE INFORMATION:

For information related to this course (e.g., announcements, course material, reading assignments, current grades), visit blackboard at http://blackboard.umr.edu/. (Course ID: *CHEM 001: GENERAL CHEMISTRY (LEC 1GG) FS2007*)
It is very important that you visit this webpage regularly!

LECTURE SCHEDULE:

DATE	APPROXIMATE CONTENT	
8/20	**Introduction and Orientation** *(1 lecture)*	
8/22	**Chapter 1**	**Introduction to Chemistry** *(1 lecture, 1 recitation)*
	Learning Objectives:	Physical properties, atomic structure, isotopes, periodic table of the elements,
8/24-8/27	**Chapter 2**	**Molecules, Ions, and Chemical Formulas** *(2 lectures, 1 recitation)*
	Learning Objectives:	Compounds, molecular structures, chemical nomenclature, acids and bases
9/7	**NOMENCLATURE EXAM**	
8/29-9/12	**Chapter 3**	**Chemical Reactions** *(5 lectures, 2 recitations)*
	Learning Objectives:	Mole, molar mass, balancing chemical equations, combustion, empirical and molecular formula, stoichiometry, limiting reactant, yield, oxidation and reduction
9/14-9/24	**Chapter 4**	**Reactions in Aqueous Solutions** *(5 lectures, 2 recitations)*
	Learning Objectives:	Concentration, molarity, ionic equation, spectator ion, precipitation, acid-base reaction, neutralization, titration, balancing oxidation-reduction reactions
9/28	**1ST IN-CLASS EXAM**	
9/26-10/3	**Chapter 5**	**Energy Changes in Chemical Reactions** *(3 lectures, 1 recitation)*
	Learning Objectives:	Heat, work, reaction enthalpy, enthalpy of formation, heat capacity, calorimetry
10/5-10/15	**Chapter 6**	**The Structure of Atoms** *(5 lectures, 2 recitations)*
	Learning Objectives:	Electromagnetic radiation, atomic spectra, wave-particle duality, energy levels, wave functions, quantum numbers, orbital shapes, building-up principle
10/17-10/19	**Chapter 7**	**The Periodic Table and Periodic Trends** *(2 lectures, 1 recitation)*
	Learning Objectives:	Atomic radius, ionization energy, electron affinity, electronegativity
10/26	**2ND IN-CLASS EXAM**	
10/22-10/29	**Chapter 8**	**Structure and Bonding I** *(3 lectures, 1 recitation)*
	Learning Objectives:	Ionic bond, lattice, covalent bond, Lewis structure, resonance, formal charge
10/31-11/5	**Chapter 9**	**Structure and Bonding II** *(3 lectures, 1 recitation)*
	Learning Objectives:	Electron repulsion, molecular shape, sigma bond, pi bond, hybridization
11/7-11/12	**Chapter 10**	**Gases** *(3 lectures, 1 recitation)*
	Learning Objectives:	Fundamental gas laws, ideal gases, partial pressure, gas stoichiometry, diffusion and effusion, real gases
11/16	**3RD IN-CLASS EXAM**	
11/14-11/28	**Chapter 11**	**Liquids** *(3 lectures, 1 recitation)*
	Learning Objectives:	Intermolecular forces, surface tension, viscosity, vapor pressure, phase diagram
11/30-12/3	**Chapter 12**	**Solids** *(2 lectures, 1 recitation)*
	Learning Objectives:	Crystalline and amorphous, unit cell, packing, ionic solid, molecular solid, metal
12/5-12/7	**Review, Evaluation**	*(2 lectures)*
	Learning Objectives:	Deepen the understanding of chemical concepts and principles
12/10	**FINAL EXAM** (1:30 – 3:30 pm, location: TBA)	

EVALUATION:

Examinations:

There will be a *NOMENCLATURE EXAM* and three *ONE-HOUR EXAMS* worth 100 points each. The exams will be held during the regular lecture time (11-11:50am) at the regular lecture hall (G-3 Schrenk Hall). They will be cumulative drawing on the material covered since the last exam. The problems on the exams will be similar to problems from your homework assignments.

Homework:

After each lecture, you will find a new online homework assignment at *www.masteringchemistry.com*, typically 2 self-tutoring or skill-building problems and 3 problems taken directly from the textbook problems at the end of each chapter. *THE HOMEWORK ASSIGNMENTS MUST BE COMPLETED ONLINE.* To enter your results online, you will be given 3 days from the day of the lecture with a sharp deadline (11pm on the 3rd day after the lecture) set by the computer system. Homework assignments you submitted online will be graded automatically. Each assignment will be worth 5 points (up to a maximum of 150 points). Since examinations and quizzes will consist of problems similar to those in your homework assignments, it is strongly recommended that you work all the problems at the end of each chapter. Your job is to master how to work the problems and to understand the concepts of chemistry. Try not to simply memorize the solutions of the few assigned problems.

Recitation Quizzes:

There will be a *10-MINUTE QUIZ AFTER EACH RECITATION* (worth 20 points each) over topics previously discussed in the lectures, or related to assigned homework problems. Only the 10 highest quiz scores will be counted toward your final grade (you have a total of 13 chances). There will be no quiz during the first week of recitations.

"Clicker" Questions:

You must acquire a *PERSONAL RESPONSE DEVICE ("CLICKER")*, and register it at the UMR bookstore. Even if you do not purchase the clicker at the UMR bookstore, you must register it there. With your clicker, you will interactively *ANSWER QUESTIONS POSTED DURING EACH LECTURE*. Your answers are worth 1 point each (up to a maximum of 100 points). They will be recorded and evaluated by the receiving computer system. Typically, the first question will be posted within the first minute of class covering assigned textbook reading. Don't be late for class if you don't want to miss these "easy" points.

Reading Notes:

TEXTBOOK READING ASSIGNMENTS WILL BE POSTED ON BLACKBOARD. To prepare for the upcoming lecture you will find a new reading assignment on blackboard after each lecture. The *NOTES YOU TAKE TO PREPARE FOR CLASS* will be collected during lecture in irregular intervals at least 5 times during the semester. Accordingly, you must have them with you at each lecture for they will be worth 10 points each time they are collected. Turning in late will not be accepted!

Final Exam:

The *TWO-HOUR FINAL EXAM* will consist of two parts worth 100 points each. The first, mandatory part is comprehensive drawing on the material covered during the semester. The second part is optional and will allow you to retake one of the Hour Exams. It is up to you to decide which Hour Exam to retake. The score from this optional part will be used to substitute a lower score from the respective Hour Exams.

Summary:

Nomenclature Exam, Hour Exams	100 points each (4)	400 points
Online Homework Assignments	5 points each (37)	150 points (max)
Recitation Quiz	20 points each (10 best out of 13)	200 points
"Clicker" Question	1 point each (about 120-130)	100 points (max)
Notes on Assigned Reading	10 points each (5)	50 points
Final Exam	100 points (+100 substituting for one Hour Exam)	100 points
Maximum total		1000 points

Grading:

Your current grade will be posted on blackboard (only visible to you) and updated regularly (about once a week). Final grades will be assigned on 90%, 80%, 70%, 60% of 1000 points for A, B, C, D letter grade, respectively. If you earn less than 600 points (60%) you will fail the class (F letter grade). **DO NOT EXPECT GRADES TO BE CURVED!** Students who earn at least 855 points (95%) before the final exam have the option of not taking the final exam and receiving a grade of A.

ATTENDANCE POLICY:

ATTENDANCE IS REQUIRED OF ALL LECTURES AND RECITATIONS. Instructor and TA may cover relevant material or examples that are not in the textbook. In case of *excused* absences (circumstances beyond the student's control, such as off-campus, UMR-sponsored activities, illness, funeral of any relative or close friend, military duty, court appearance, or personal emergencies), students are permitted to make up graded work. Clicker questions are excluded from any make-up policy.

STUDENTS WITH SEVERAL UNEXCUSED ABSENCES FROM LECTURES OR RECITATIONS WILL BE SUBJECT TO RECEIVING ACADEMIC ALERTS TO ASSIST IN THE STUDENT'S SUCCESS IN THE CLASS

ACADEMIC ALERTS:

Academic alerts will be issued if a student fails to attend lectures and recitations regularly and accrues several unexcused absences. Alerts will also be issued for unsatisfactory performance such as several missed assignments. The purpose of Academic Alerts is to improve the academic success of students by improving the communication between student, instructor, and advisor and informing students of actions necessary to meet the academic requirements in their courses. It is strongly recommended that students promptly respond to all academic alerts issued for them.

DISABILITY SUPPORT:

If you have a documented disability and anticipate needing special accommodations in this course, you are strongly encouraged to meet with the instructor early in the semester. You will need to request that the Disability Services staff send a letter to the instructor verifying your disability and specifying the accommodation you will need before accommodations can be arranged.

STUDENT STANDARD OF CONDUCT:

Student Academic Regulations B.:

(http://campus.umr.edu/registrar/academicregs/academic%20reg%202006-2008.pdf)

1. "(…) The Board of Curators recognizes that academic honesty is essential for the intellectual life of the University. Faculty members have a special obligation to expect high standards of academic honesty in all student work. Students have a special obligation to adhere to such standards. In all cases of academic dishonesty, the instructor shall make an academic judgment about the student's grade on that work and in that course. The instructor shall report the alleged academic dishonesty to the Primary Administrative Officer.

a. The term **cheating** includes but is not limited to:
   - i use of any unauthorized assistance in taking quizzes, tests, or examinations
   - ii dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments.
   - iii acquisition or possession without permission of tests or other academic material belonging to a member of the University faculty or staff
   - iv knowingly providing any unauthorized assistance to another student on quizzes, tests, or examinations.

b. The term **plagiarism** includes, but is not limited to:(i) use by paraphrase or direct quotation of the published or unpublished work of another person without fully and properly crediting the author with footnotes, citations or bibliographical reference; (ii) unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials; or (iii) unacknowledged use of original work/material that has been produced through collaboration with others without release in writing from collaborators.

Clickers (Response Devices):
Clickers must be used as registered or assigned for each student. Any use of these devices other than specified by the instructor as the intended use may be considered an act of academic dishonesty. This includes, but is not limited to, using a clicker that is not registered in your name or has been assigned to you by the instructor.

Calculators:
During examinations, calculators must only be used to assist in conducting numeric calculations. Any use of calculators other than conducting numeric calculations may be considered an act of academic dishonesty. This includes, but is not limited to, using the calculator's memory to store formulae or other information that might be related to the topic of general chemistry.