Chemistry 1 (Sections GG and HH) Course Syllabus for FS 2008

INSTRUCTOR: **DR. TERRY BONE**
(tbone@mst.edu) 234 Schrenk Hall, (573) 341-4820

Lectures: MWF 11-12……G-3 Schrenk Hall……(no lectures on 9/1, 11/24 through 11/28)

Office Hours: Tu-F 9-10 am (or with appointment)……234 Schrenk Hall……(no office hours on 9/1, 11/24)

Recitations: 305 Schrenk Hall, 202 Comp Sci …… (no recitations on 11/25 and 11/27)

G1: Tu8-9	**G2**: Tu9-10	**G3**: Tu10-11	**G4**: Tu11-12	G1-G3 & H1-H3 in 305 Schrenk
H1: Th8-9	**H2**: Th9-10	**H3**: Th10-11	**H4**: Th11-12,	G4 & H4 in 202 Comp Sci

TAs: Recitation Sections **G1-G4:** **YONGQING JIANG** (yj343@mst.edu) 345 Schrenk Hall (573) 341-6177
Recitation Sections **H1-H4:** **BOONTA HETAYOTHIN** (bhp67@mst.edu) 125 Schrenk Hall (573) 341-6453

LEAD (LEARNING ENHANCEMENT ACROSS DISCIPLINES): ……..(no LEAD 11/24 through 11/27)

Faculty-based LEAD Centers……139 Schrenk Hall……(starting 9/2)

M7-9pm (Dr. Bone, …) Tu3-5pm (Dr. Schuman, …),
W7-9pm (Dr. Collier, …) Th3-5pm (Dr. Woelk, …)

Drop-in LEAD Tutoring……208 Norwood Hall …… (starting 9/2)

TuTh7-9pm (…)

LEAD CENTERS and **LEAD TUTORING** are unique, collaborative learning environments for students who wish to improve their conceptual understanding and their mastery of the material. Centers and Tutoring will have outstanding students (PLAs = Peer Learning Assistants) to guide you. During LEAD Centers, a course instructor will also be there to help.

Chemistry LEAD is an excellent opportunity (and certainly **better than paying someone else**) to get a good understanding of chemical principles and concepts, prepare for homework assignments, and get in contact with your peers.

To encourage your participation, **attendance will be recorded** by a student ID-card swipe device and taken into account for raising borderline grades at the end of the semester.

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 & 2)
with online homework *MasteringGeneralChemistry* (student edition), ISBN 0-8053-8280-3799-7

—————— Textbook and *MasteringGeneralChemistry* may also be acquired separately ——————

Calculator: Scientific notation required (equation-solving or graphing capabilities optional). Cell phones, phones with PC-like functionality (smartphones), personal data assistants (PDAs), or laptops are not permitted as calculators.

Clicker: *TurningPoint* ***ResponseCard® XR with LCD display*** from *TurningTechnologies* (so-called ***XR Clicker***; see http://www.turningtechnologies.com/interactiveaudienceresponseproducts/responsecards/responsecardxr.cfm for more information). **Do not buy *ResponseCard® RF* or *ResponseCard® IR*** without the LCD display. *XR Clickers* needed for this class can be used in all Missouri S&T courses for which clickers are required. **You must register your clicker at the on-campus *Missouri S&T* Bookstore** (in the Havener Center), even if you did not purchase it there. **It is necessary to re-register your clicker every semester!** For example, if you used the *XR Clicker* at HGR, you must still re-register it for this fall semester.

Folder: Standard three-prong pocket folder to submit your reading notes

COURSE INFORMATION & DISCUSSION BOARD:

For information related to this course (e.g., announcements, course material, reading assignments) visit http://blackboard.mst.edu/. (Course ID: *CHEM 001: GENERAL CHEMISTRY (GG & HH) FS2008*)

—————— **It is very important that you visit this webpage regularly!** ——————

A course discussion board is available on http://blackboard.mst.edu/ for you to converse with your peers and comment on issues related to this course. Threads will be initiated for every homework problem as well as issues you or your peers suggest. **Please participate frequently** in this modern way of communication.

EVALUATION:

Examinations:

There will be a *NOMENCLATURE EXAM* worth 80 points and three *ONE-HOUR EXAMS* worth 100 points each. These exams will be held during the regular lecture time (10-10:50am) at the regular lecture hall (G-3 Schrenk Hall). They will be cumulative, drawing on material covered since the last exam. Problems on the exams will be similar to problems from your homework assignments.

If you are not satisfied with the score you earned in an exam, you will be given the opportunity to retake the exam (including the Nomenclature Exam) on the second Monday (8-8:50pm) after the original exam date. If you earn a better result in the retake exam, your score will be replaced by the original exam score plus 70% of the difference between the original and retake scores. If you earn a lower score in the retake exam, your score will be replaced by the average of the original and retake scores.

Homework:

After each lecture, you will find a new online homework assignment at *www.masteringchemistry.com*. A homework assignment will typically consist of 5 sets of 2 problems, where the first will be a self-tutoring or skill-building practice problem and the second a for-credit problem taken directly from the textbook problems at the end of each chapter.

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 set by the computer system (11pm on the 3rd day after the lecture). Homework assignments you submit online will be graded automatically. Each assignment will be worth 5 points each (up to a maximum of 170 points).

SEE THE MASTERINGCHEMISTRY GRADING POLICY AND HOW TO SIGN UP FOR MASTERINGCHEMISTRY ON A SEPARATE PAGE BELOW.

Because 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 AT THE END OF 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 and last week of recitations.

"Clicker" Questions:

With your clicker, you will interactively *ANSWER QUESTIONS OR RESPOND TO PROBLEMS 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. If you don't want to miss these "easy" points, **DON'T BE LATE FOR CLASS!**

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 (instructions on separate page below)* will be collected during lecture 5 times during the semester (worth 10 points each). Because the dates of collection will not be pre-announced, you must have your notes with you at each lecture. **LATE NOTES WILL NOT BE ACCEPTED!**

Final Exam:

The *TWO-HOUR FINAL EXAM* worth 100 points will be comprehensive, drawing on all material covered during the semester.

Evaluation Summary:

Nomenclature Exam	80 points	80 points
Hour Exams	100 points each (3)	300 points
Online Homework Assignments	5 points each (37)	170 points (max)
Recitation Quizzes	20 points each (10 best out of 13)	200 points
"Clicker" Questions	1 point each (about 130-140)	100 points (max)
Notes on Assigned Reading	10 points each (5)	50 points
Final Exam	100 points	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.

LECTURE SCHEDULE:

DATE	APPROXIMATE CONTENT	
8/25	**Introduction and Orientation** *(1 lecture)*	
8/27	**Chapter 1** *Learning Objectives*:	**Introduction to Chemistry** *(1 lecture, 1 recitation)* Atomic structure, isotopes, periodic table of the elements
8/29-9/3	**Chapter 2** *Learning Objectives*:	**Molecules, Ions, and Chemical Formulas** *(2 lectures, 1 recitation)* Compounds, molecular structures, chemical nomenclature, acids and bases
9/12	**NOMENCLATURE EXAM**	(retake date 9/22)
9/5-9/17	**Chapter 3** *Learning Objectives*:	**Chemical Reactions** *(5 lectures, 2 recitations)* Mole, molar mass, balancing chemical equations, combustion, empirical and molecular formula, stoichiometry, limiting reactant, yield, oxidation and reduction
9/19-10/1	**Chapter 4** *Learning Objectives*:	**Reactions in Aqueous Solutions** *(6 lectures, 2 recitations)* Concentration, molarity, ionic equation, spectator ion, precipitation, acid-base reaction, neutralization, balancing oxidation-reduction reactions, titration
10/3	**1ST HOUR EXAM**	(retake date 10/13)
10/6-10/8	**Chapter 5** *Learning Objectives*:	**Energy Changes in Chemical Reactions** *(2 lectures, 1 recitation)* Heat, reaction enthalpy, enthalpy of formation, heat capacity, calorimetry
10/10-10/17	**Chapter 6** *Learning Objectives*:	**The Structure of Atoms** *(4 lectures, 1 recitations)* Electromagnetic radiation, atomic spectra, wave-particle duality, energy levels, wave functions, quantum numbers, orbital shapes, building-up principle
10/20	**Chapter 7** *Learning Objectives*:	**The Periodic Table and Periodic Trends** *(1 lecture, 1 recitation)* Atomic radius, ionic radius, ionization energy, electron affinity, electronegativity
10/24	**2ND HOUR EXAM**	(retake date 11/3)
10/22-11/3	**Chapter 8** *Learning Objectives*:	**Structure and Bonding I** *(5 lectures, 2 recitation)* Ionic bond, lattice energy, covalent bond, Lewis structure, resonance structure, formal charge, bond polarity
11/5-11/10	**Chapter 9** *Learning Objectives*:	**Structure and Bonding II** *(3 lectures, 1 recitation)* Electron repulsion, molecular shape, sigma bond, pi bond, hybridization
11/12-11/17	**Chapter 10** *Learning Objectives*:	**Gases** *(3 lectures, 1 recitation)* Fundamental gas laws, ideal gas, partial pressure, gas stoichiometry, real gas
11/21	**3RD HOUR EXAM**	(retake date 12/1)
11/19-12/3	**Chapter 11** *Learning Objectives*:	**Liquids** *(3 lectures, 1 recitation)* Intermolecular forces, surface tension, viscosity, vapor pressure, phase diagram
12/5-12/8	**Chapter 12** *Learning Objectives*:	**Solids** *(2 lectures, 1 recitation)* Crystalline and amorphous, unit cell, packing, ionic solid, molecular solid, metal
12/10-12/12	**Review, Evaluation** *Learning Objectives*:	*(2 lectures)* Deepen the understanding of chemical concepts and principles
12/18	**FINAL EXAM** (1:30 – 3:30 pm, St. Pat's Ballroom, Havener Center)	

ATTENDANCE POLICY:

STUDENTS ARE REQUIRED TO ATTEND ALL LECTURES AND RECITATIONS. Your Instructor or TA may cover relevant material or examples that are not in the textbook. In the case of an *excused* absence (circumstances beyond the student's control, such as Missouri S&T-sponsored activities, illness, funeral of a relative or close friend, military duty, court appearance, or personal emergencies), students may be 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 (SEE BELOW).

ACADEMIC ALERTS:

Academic alerts will be issued if a student fails to attend lectures or recitations regularly and accrues several unexcused absences. Alerts will also be issued for insufficient performance such as several missed assignments or unsatisfactory grades. The purpose of Academic Alerts is to improve the student's academic success by *ENHANCING THE COMMUNICATION* between the student, instructor, and advisor, and informing the student of *NECESSARY ACTIONS* to meet the requirements in the course. It is essential that a student promptly responds to an academic alert.

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 accommodations you will need. Only then, accommodations can be arranged.

STUDENT STANDARD OF CONDUCT:

Student Academic Regulations B.:

(http://registrar.mst.edu/documents/academic_regulations2007-2008.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 not 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.