

# Chemistry 1 (Section DD) Course Syllabus for FS 2009

<b><u>INSTRUCTOR</u></b>	<b>DR. TERRY BONE</b> ( <a href="mailto:tbone@mst.edu">tbone@mst.edu</a> )	Lecturer 333 Schrenk Hall, (573) 341-4820
<b>Lectures:</b>	MWF 11-12am .....	G-3 Schrenk Hall ..... (no lectures on 9/7, or from 11/23 through 11/27)
<b>Office Hours</b>	Tu-Th 9-10am (or by appointment) .....	333 Schrenk Hall ..... (no office hours on 9/7, 11/24)
<b>Recitations</b>	305, 139 Schrenk Hall.....(no recitations on 11/24 and 11/26)	
	<b>D1:</b> Tu 8-8:50 <b>D2:</b> Tu 9-9:50 <b>D3:</b> Tu 10-10:50 <b>D4:</b> Tu 11-11:50 (D4 in Rm139)	
	<b>D5:</b> Th 8-8:50 <b>D6:</b> Th 9-9:50 <b>D7:</b> Th 10-10:50 <b>D8:</b> Th 11-11:50 (D8 in Rm 139)	
<b><u>TAs</u></b>	Recitation Sections <b>D1, D2, D3, D4:</b> Boonta Heytayothin ( <a href="mailto:bhp67@mst.edu">bhp67@mst.edu</a> )      125 Schrenk Hall      341-6453	
	Recitation Sections <b>D3, D4, D7, D8:</b> Yongqing Jiang      ( <a href="mailto:yj343@mst.edu">yj343@mst.edu</a> )      345 Schrenk Hall      341-6177	

**LEAD (LEARNING ENHANCEMENT ACROSS DISCIPLINES)** ..... (no LEAD on 9/7, 11/23 through 11/26)

**Faculty-based LEAD Centers**.....139 Schrenk Hall.....(starting 8/31)

M 7-9pm (Dr. Bone, ...)

Tu 3-5pm (Dr. Schuman, ...)

W 7-9pm (Dr. Collier, ...)

Th 3-5pm (Dr. Woelk, ...)

**Walk-in LEAD Tutoring** T-Th 7-9pm 208 in Norwood Hall; consult LEAD schedule: <http://lead.mst.edu/>

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## **REQUIRED MATERIAL**

- Textbook:** Bruce Averill, Patricia Eldridge, ***Chemistry - Principles, Patterns, and Applications*** (Vol. 1) with online homework *MasteringGeneralChemistry* subscription (student edition), ISBN 0-8053-8280-1
- or:** Bruce Averill, Patricia Eldridge, ***Chemistry - Principles, Patterns, and Applications***, (combined Vols. 1 & 2) with online homework *MasteringGeneralChemistry* subscription (student edition), ISBN 0-8053-3799-7
- Textbook and *MasteringGeneralChemistry* subscription may also be acquired separately —————
- Calculator:** Scientific notation **required**. Equation-solving or graphing calculators, cell phones, phones with PC-like functionality (smartphones), personal data assistants (PDAs), or laptops are **not** permitted as calculators.
- Cellphones:** Turn off all electronic devices before class begins or you may be asked to leave the room.
- 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 a ResponseCard® RF or ResponseCard® IR** (without the LCD display). XR Clickers required for this class can be used in all Missouri S&T courses for which clickers are used. **You must register your clicker on blackboard (<https://blackboard.mst.edu/>). It is very important** 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 3-prong folder, NOT a 3 ring binder, for the collection and submission of reading notes.

## **COURSE INFORMATION & DISCUSSION BOARD**

For information related to this course (e.g., announcements, course material, reading assignments, current grades) visit <http://blackboard.mst.edu/>, Course ID: CHEM 001: GENERAL CHEMISTRY (LEC 1DD) FS2009

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

A course discussion board is available at <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 and for other issues you or your peers suggest. **Please participate** in this modern way of communicating and learning.

## **GRADING AND LEARNING ASSESSMENT**

### **Homework**

After each lecture, a new online homework assignment will be posted at [www.masteringchemistry.com](http://www.masteringchemistry.com). Each homework assignment will typically consist of 5 sets of 2 to 4 problems, where the first will be a skill-building practice problem and the second to fourth will be for-credit problems taken directly from the textbook problems at the end of each chapter.

**HOMEWORK ASSIGNMENTS MUST BE COMPLETED ONLINE.** You will have 3 days from the day of the lecture to enter your solutions before a sharp ! electronic deadline (at precisely 11pm on the 3<sup>rd</sup> day after the lecture). Your homework solutions are graded automatically and provide you immediate feedback. Each completed assignment is worth 5 pts. (HW max of 170 pts).

SEE HOW TO SIGN UP AND THE GRADING POLICY FOR MASTERING CHEMISTRY IN THE MASTERING CHEMISTRY FILE.

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Because examinations and quizzes will consist of problems similar to those in homework assignments, which are also found at the end of the book chapters, it is **strongly** recommended that you work more of the problems at the end of each chapter to master the material. Your job is to not only learn but become proficient at solving the problems so that you can demonstrate on an exam that you have learned the chemistry concepts. Do not simply memorize the solution to a few problems.

## **Recitation Quizzes**

There will be a 10-MINUTE QUIZ AT THE END OF EACH RECITATION CLASS (worth 20 points each) over topics previously discussed in the lecture or from among the homework problems. Only the 10 highest quiz scores (out of 13 total quizzes during the semester) will be counted toward your final grade points. There is no quiz during the first and last week of recitation.

## **“Clicker” Questions**

With the clicker, you interactively RESPOND TO PROBLEMS POSTED DURING THE LECTURES. Correct answers are worth 1 point each (earn up to a maximum of 120 grade points). Your responses are evaluated and recorded and also used for attendance. 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 forget your clicker and 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 to be read BEFORE the lecture. Take notes on the sections you read. Written notes you take to prepare for class (instructions provided separately) will be collected during lecture at irregular intervals at least 5 times during the semester. You must bring all reading notes with you to each lecture: Notes are worth 10 points each time they are collected but they **MUST** be turned in when requested. - LATE READING NOTES WILL NOT BE ACCEPTED!

## **EXAMINATIONS (4 Hour exams and 1 Final)**

There will be a NOMENCLATURE EXAM worth 100 points and three HOURLY EXAMS worth 120 points each. All hourly exams will be held during the regular lecture time (11-11:50am) in the usual lecture room (G-3 Schrenk Hall). The hourly exams will be over 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 earn on an exam, you have one opportunity to retake each exam, given on the second Monday (8-8:50pm) after the original Friday exam date (see p. 3 schedule). If you choose to retake an exam, your recorded score will be an average of the original and the retake scores, regardless of which one is higher.

## **Final Exam**

The TWO-HOUR FINAL EXAM is comprehensive over all course material and is worth 200 final grade points.

## **Grade Assessment and Feedback**

Your current grade will be posted on <http://blackboard.mst.edu> (only visible to you) and updated after each major exam. Final grades will be assigned on 90%, 80%, 70%, 60% of 1200 points for A, B, C, D letter grades, respectively. If you earn less than 720 points (60%) you will fail the class (F letter grade). **GRADES ARE NOT CURVED FOR THIS CLASS!** Students who earn at least 950 points (95%) before the final exam have the option of not taking the final exam but receiving a grade of A.

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## LECTURE SCHEDULE

<u>DATE</u>	<u>APPROXIMATE CONTENT</u>
8/24	Introduction and Orientation (1 lecture)
8/26	Chapter 1 Introduction to Chemistry (1 lecture, 1 recitation) Learning Objectives: Physical properties, atomic structure, isotopes, periodic table of the elements
8/28-8/31	Chapter 2 Molecules, Ions, and Chemical Formulas (2 lectures, 1 recitation) Learning Objectives: Compounds, molecular structures, chemical nomenclature, acids and bases
9/11	NOMENCLATURE EXAM retake 9/21
9/2-9/16	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
9/18-9/30	Chapter 4 Reactions in Aqueous Solutions (6 lectures, 2 recitations) Learning Objectives: Concentration, molarity, ionic equation, spectator ion, precipitation, acid-base reaction, neutralization, titration, balancing oxidation-reduction reactions

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10/2	_____	1 <sup>ST</sup> IN-CLASS EXAM Chapters 1 - 4	retake 10/12 _____
10/5-10/7	<b>Chapter 5</b> <i>Learning Objectives:</i>	<b>Energy Changes in Chemical Reactions</b> (2 lectures, 1 recitation) Heat, work, reaction enthalpy, enthalpy of formation, heat capacity, calorimetry	
10/9-10/16	<b>Chapter 6</b> <i>Learning Objectives:</i>	<b>The Structure of Atoms</b> (4 lectures, 1 recitation) Electromagnetic radiation, atomic spectra, wave-particle duality, energy levels, wave functions, quantum numbers, orbital shapes, building-up principle	
10/19	<b>Chapter 7</b> <i>Learning Objectives:</i>	<b>The Periodic Table and Periodic Trends</b> (1 lecture, 1 recitation) Atomic radius, ionization energy, electron affinity, electronegativity	
10/23	_____	2 <sup>ND</sup> IN-CLASS EXAM Chapters 5 to 7	retake 11/2 _____
10/21-11/2	<b>Chapter 8</b> <i>Learning Objectives:</i>	<b>Structure and Bonding I</b> (5 lectures, 2 recitations) Ionic bond, lattice, covalent bond, Lewis structure, resonance, formal charge	
11/4-11/9	<b>Chapter 9</b> <i>Learning Objectives:</i>	<b>Structure and Bonding II</b> (3 lectures, 1 recitation) Electron repulsion, molecular shape, sigma bond, pi bond, hybridization	
11/11-11/16	<b>Chapter 10</b> <i>Learning Objectives:</i>	<b>Gases</b> (3 lectures, 1 recitation) Fundamental gas laws, ideal gases, partial pressure, gas stoichiometry, diffusion and effusion, real gases	
11/20	_____	3 <sup>RD</sup> IN-CLASS EXAM Chapters 8 to 10	retake 11/30 _____
11/18-12/2	<b>Chapter 11</b> <i>Learning Objectives:</i>	<b>Liquids</b> (3 lectures, 1 recitation) Intermolecular forces, surface tension, viscosity, vapor pressure, phase diagram	
12/4-12/7	<b>Chapter 12</b> <i>Learning Objectives:</i>	<b>Solids</b> (2 lectures, 1 recitation) Crystalline and amorphous, unit cell, packing, ionic solid, molecular solid, metal	
12/9-12/11	<b>Review, Evaluation</b> <i>Learning Objectives:</i>	(2 lectures) Deepen the understanding of chemical concepts and principles	
12/16	8:00-10:00 AM _____	<b>FINAL EXAM</b> (TBA) Comprehensive Chapters 1- 12	_____

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## ATTENDANCE POLICY

STUDENTS ARE REQUIRED TO ATTEND ALL LECTURES AND RECITATIONS. The TA or I may cover relevant material or examples that are not in the textbook. In the case of an *excused* absence (such as Missouri S&T-sponsored activities, illness, funeral of a relative or close friend, military duty, court appearance, or personal emergencies must be approved in advance at professor's discretion), students may be permitted to make up graded work. Clicker questions are excluded from any make-up policy.

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## ACADEMIC ALERTS

An Academic Alert is an indication of probable failure in the course that is issued if you consistently fail to attend lectures or recitations. Alerts will also be issued for insufficient performance such as missing assignments and/or unsatisfactory grades. The purpose of the Academic Alert system is to improve the chance of student 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 you promptly respond to and take action to correct 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 provide a letter to the instructor verifying your disability and specifying accommodations you will need so proper accommodations can be arranged.

## STUDENT STANDARD OF CONDUCT

**Student Academic Regulations B.** ([http://registrar.mst.edu/documents/academic\\_regulations2008-2010.pdf](http://registrar.mst.edu/documents/academic_regulations2008-2010.pdf)) pg.30

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 by or assigned to an individual 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.

### **Calculators:**

During examinations, calculators are used to assist with numeric calculations. Any use of a device other than for conducting numeric calculations is considered an act of academic dishonesty. This includes, but is not limited to, using the calculator's memory to store formulae or other information related to the topic of chemistry.