CHEM 106: Chemistry Survey (3 Credits)  
South Dakota School of Mines and Technology  
Fall 2010

Meeting Time and Location:  
Monday, Wednesday, Friday 01:00PM - 01:50PM  
Chem-Chem Engr Building, Room 228

Instructor's Contact Information:  
Instructor: Dr. Zhengtao Zhu  
Office: Chemistry and Chemical Engineering 316;  
Phone: 394-2447;  
Email: Zhengtao.Zhu@sdsmt.edu  
Office Hours: Monday, Wednesday, 10:00-11:00 AM, and Thursday 2:00-3:00 PM; or by appointment.

Catalog Description:  
A one semester survey of chemistry. Not intended for those needing an extensive chemistry background. Introduction to the properties of matter, atomic structure, bonding, stoichiometry, kinetics, equilibrium, states of matter, solutions, and acid-base concepts. May not be used for credit toward an engineering or science degree (except Interdisciplinary Science and Associate of Arts).

Course Prerequisites:  
Math 101 Intermediate Algebra.

Instructional Methods:  
The course is managed through the course D2L website at [https://d2l.sdbor.edu/index.asp]. The course will be taught using the PowerPoint and chalkboard lectures. The lecture notes will be available on the course D2L website at [https://d2l.sdbor.edu/index.asp] and it is recommended that students take notes during the lectures. Course-related announcement and online take-home quizzes will be given through the course D2L website. (To learn how to use D2L website, go to [http://its.sdsmt.edu/software/d2l]). It is the responsibility of the students to check the course D2L website for announcements and online quizzes.

Course Requirements:  
Required textbook and other materials:  
2. Any calculator that is capable of taking square roots, logarithms (ln and log), and raising numbers to powers (ex, 10^x). Programmable calculators are not permitted and the use of one will be considered cheating and dealt with accordingly

Class attendance policy:  
Attendance at lectures is expected.

Cheating and plagiarism policy:  
Any cheating as defined by the student code of conduct is not tolerated in this course. See [http://sdmines.sdsmt.edu/sdsmt/studentconduct/main] regarding the student code of conduct. Cases of cheating will be handled on a case to case basis as defined in the student code of conduct. Please note that according to “Policy Governing Academic Integrity” in the SDSM&T Undergraduate Catalog, the instructor of record for this course has discretion of how acts of academic dishonesty are penalized, subject to the appeal process, and that "Penalties may range from requiring the student to repeat the work in question to failure in the course.". (72-73).

Make-up policy  
see "Evaluation Procedures" section

Course Goals and Student Learning Outcomes:  
Students will understand the fundamental principles of the chemistry and apply scientific methods of inquiry to investigate the chemistry of natural world. After successful completion of this course, a student is expected to:  
• identify and explain the basic concepts, terminology and theories of chemistry;
• apply the mole concept in a variety of chemical calculations including calculating the number of particles in a given mass of substance, and the quantitative relationships between reactants and products in a chemical reaction;
• apply the fundamental postulates of kinetic-molecular theory to explain the physical behaviour of the three states of matter;
• apply unit analysis to solve a variety of conversions between one system of measurement and another;
• apply the symbolic representations, chemical notation, formulas, and systematic rules of nomenclature that characterize the language of chemistry;
• determine the geometry of molecules and ions by applying VSEPR theory; and
• apply selected natural science concepts and theories to contemporary issues.

Evaluation Procedures:

No extra credit under any circumstance.

Final grades are determined based on the total points earned out of the 600 possible in the course.

<table>
<thead>
<tr>
<th>Evaluation Activity</th>
<th>Points</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Total Quiz Scores</td>
<td>150</td>
<td>25%</td>
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<tr>
<td>Three Hour Exams Scores</td>
<td>300</td>
<td>50%</td>
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<tr>
<td>Final Exam</td>
<td>150</td>
<td>25%</td>
</tr>
<tr>
<td><strong>Total points</strong></td>
<td><strong>600</strong></td>
<td><strong>100%</strong></td>
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Once your cumulative total has been calculated, grades are assigned according to the following scale:

- A: >90% = 540 points;  
- B: >80% = 480 points;  
- C: >70% = 420 points;  
- D: >60% = 360 points;  
- F: <360 points.

*These levels may change, but they will not increase.

Homework: Practice problems from your textbook will be assigned for each chapter. These assignments will not be collected and graded. You are encouraged to work out all the practice problems. Similar questions to the assigned practice problems will appear on quizzes and/or exams. You are the judge of how well you know the material. If you need help or guidance within this class, please come and see me during my office hours (or by appointment). Help is also available through the Tech Learning Center.

Quizzes (150 pts): Throughout the period of the course, in-class quizzes, in-class group studies, and online quizzes will be given. Quizzes may be given during the first 5-10 minutes of class time and will not be announced. The quiz will cover the material and the assigned practice problems from the prior lectures. In general, you will expect one quiz each week. You will also have online take-home quizzes through the D2L course website. From time to time, students may have group-studies in class, and those group-studies will be collected and graded. The answer keys will be posted on the course website. **There is no make-up for in-class quizzes, in-class group studies, and online quizzes.** One quiz with the lowest score will be dropped, and the total scores of these activities are calculated according to the formula: \( \text{The total quiz score} = \frac{\text{your cumulative points}}{\text{maximum possible points} \times 150} \).

Hour Exams (300 pts): Three hour exams of 100 points each will be given during this course. For the exams, you should bring your own calculator capable of handling exponents and logarithms. You will be expected to present your student ID to the exam proctor upon request. An absence from any exam results in a score of zero for that exam; no make-up exams are given and no exam is dropped. If you have an irresolvable conflict, then you must make other arrangements with me to take the exam or exams at an alternative time. **Arrangements for alternative exam times must be made at least one week prior to the exam and be made in person; requests by email or telephone will not be honored.** If participation in a school-sponsored activity requires you to be absent on the day an
exam is scheduled, you are required to take the exam prior to leaving on the activity. Arrangements to do so must be made with me, in person, a minimum of one week in advance of the exam date. In the case of extreme illness the matter will be handled by the Dean of Students office.

**Final Exam (150 pts):** The final exam for the course will be comprehensive and will be given during the final week. The final exam is given on December 16, 10:00 -11:50 am in Chemistry/Chemical Engineering Building 228.

**Withdrawal Deadline:** The last day to drop this class with a grade of "W" recorded on your transcript is Nov. 15, 2010.

**Incomplete Grades (INC):** According to University policy, the grade of INC may be assigned at the discretion of the instructor when a student, for good reason (e.g., serious health problems) has not completed a portion of the work for the course while the rest of the work for the course has been satisfactorily completed. Therefore, a grade of incomplete will only be assigned to students who are earning a grade of C or better. When the incomplete is granted, the instructor will stipulate what work is required to complete the course and a deadline for completion of that work; grades for all of the student’s work completed before assignment of the incomplete, in combination with the work completed after the assignment of the incomplete will be used to complete the final grade for the course.

**ADA Statement:**

Students with special needs or requiring special accommodations should contact the instructor, Dr. Zhengtao Zhu, at 394-2447 and/or the campus ADA coordinator, Jolie McCoy, at 394-1924 at the earliest opportunity.

**Freedom in Learning:**

Under Board of Regents and University policy student academic performance may be evaluated solely on an academic basis, not on opinions or conduct in matters unrelated to academic standards. Students should be free to take reasoned exception to the data or views offered in any course of study and to reserve judgement about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled. Students who believe that an academic evaluation reflects prejudiced or capricious consideration of student opinions or conduct unrelated to academic standards should contact the dean of the college which offers the class to initiate a review of the evaluation.

**Electronic Devices Policy:**

Please turn off your cell phone before your section starts. No text messaging in class. No head-phones. Using laptop in this class for purposes of note taking is allowed. No other use of any other electronic/computer media is allowed during class time.

This syllabus is subject to change throughout the semester.

(See "Tentative Course Schedule" on the next page.)
### Tentative Course Schedule:

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<tr>
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<th>Chapter*</th>
<th>Exam</th>
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<tr>
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<td>1</td>
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<td>Sept. 6-10</td>
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<td>Sept. 13-17</td>
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<td>Sept. 20-24</td>
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<td>Sept. 27-Oct. 1</td>
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<td>Oct. 4-8</td>
<td>4</td>
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<td>Oct. 11-15</td>
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<td>Oct. 18-22</td>
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<td>Oct. 25-29</td>
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<td>Nov. 1-5</td>
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<td>Nov. 1 (Chapters 4, 5, 6)</td>
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<td>Nov. 8-12</td>
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<td>Nov. 15-19</td>
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<td>Nov. 29- Dec. 3</td>
<td>9</td>
<td>Dec. 1 (Chapters 7, 8)</td>
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<td>Dec. 6-10</td>
<td>10</td>
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<tr>
<td>Dec. 13-17</td>
<td></td>
<td>Final Exam, Dec. 16, 10:00-11:50 am,</td>
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