Prerequisites: 
Completion of Math 102 or a score on the math placement exam sufficient to place in Math 115 or higher.

Students with special needs or requiring special accommodations should contact the instructor, (Tsvetanka Filipova, at 394-1698) 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 judgment 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.

Catalogue Description: (3-0) 3 credits. Prerequisite: Math. 102. An introduction to the basic principles of chemistry for students needing an extensive background in chemistry (including chemistry majors, science majors, and pre-professional students). Completion of a high school course in Chemistry is recommended.

REQUIRED:
2. Scientific Calculator. (Cell phones may not be used for this purpose)
3. Tablet PC or comparable laptop

Course Description
Chemistry 112, General Chemistry I, is the first semester of a two-semester sequence that surveys the important concepts, principles, and models of chemistry. Topics treated in the first semester are: measurements, atomic theory, stoichiometry, thermochemistry, states of matter, periodicity, bonding, and physical properties of solutions.

GRADING AND COURSE POLICIES

Objective Factors:
1. Hour Exams (4; 100 pts each). 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. Exams are given during one of the common exam times, according to the exam schedule below, and calculators are permitted on all exams unless stated otherwise. All students are required to make arrangements with their employer, if necessary, to get the time off to take the exam at the scheduled time. 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. All students must take all exams on the dates and times scheduled. 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. **Exams cannot be taken late under any circumstances.** In the case of extreme illness the matter will be handled by the Dean of Students office. On the day of the exam regular class is cancelled. The room you will take the exam in will be announced in class prior to the tests if not stated below or if a change is necessary.

### EXAM DATES

<table>
<thead>
<tr>
<th>EXAM 1</th>
<th>Monday Sept. 26th from 7-9pm</th>
<th>Chapters 1 - 4</th>
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</thead>
<tbody>
<tr>
<td>EXAM 2</td>
<td>Monday  Oct. 24th from 7-9pm</td>
<td>Chapters 5 - 7</td>
</tr>
<tr>
<td>EXAM 3</td>
<td>Monday Nov. 14th from 7-9pm</td>
<td>Chapters 8 - 10</td>
</tr>
<tr>
<td>EXAM 4</td>
<td>Monday Dec. 12 from 8-10am</td>
<td>Chapters 11 - 13</td>
</tr>
</tbody>
</table>

All tests will be taken in EP 252 and/or C228 (Physics and Chemistry building lecture halls)

You will be told which room in class prior to the exam.

No hats, cell phones, or backpacks allowed in test room.

(Violations of this will be dismissed from the test with no chance of makeup)

### GRADE ASSIGNMENT

<table>
<thead>
<tr>
<th>Grade</th>
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<tbody>
<tr>
<td>A</td>
<td>450 - 500</td>
<td>C</td>
<td>350 – 399</td>
<td>F</td>
<td>0 - 299</td>
</tr>
<tr>
<td>B</td>
<td>400 - 449</td>
<td>D</td>
<td>300 – 349</td>
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<td></td>
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</tbody>
</table>

There is no extra credit given in this class

### 2. Assigned Homework and Quizzes (100 pts):** There will be short quizzes at home after every lecture and possibly in class. Homework problems will also be given. All assignments are due through the online class site at WileyPlus. There is no makeup for assigned items or quizzes past the set due date. The total number of quizzes and assignments will be normalized to 100 points. For example, if we have 10 quizzes and 10 homework assignments, each will be worth 4 points. These assignments will not be returned to the student in class because they are graded and stored in WileyPlus. If a student should want to discuss the results of any assignment or quiz, they should see me during office hours.

### 3. Homework: I suggest you do as many problems in the text as you can other than ones assigned, especially questions whose solutions are given in the back of the book or posted on the course page. This online test site has many problems to help you understand the concepts needed for mastery of general chemistry. You are the judge of how well you know the material. At any time you need help or guidance within this class please come see me or the student assistant. Help is also available through the Tech Learning Center.

### 4. Reading Assignment Schedule and Objectives:** Reading assignments for each chapter are given on the course schedule. You will have various assignments online over the course of the semester. Just because it is not assigned does not mean you should not look at it or work problems. Topics of the reading will be found in the quizzes and homework during the next lecture. It is your responsibility to check Wiley Plus for assignments and announcements pertaining to class.

### 5. Tablet PC Usage:** This course is taught primarily using Power point slides. Access to these slides will be given through the course page located at WileyPlus. You must register at the WileyPlus site on the first day of class to be enrolled. Most homework and reading assignments will also be on this website. You must check the site often to stay on top of assigned work. The textbook can also be viewed in its entirety alleviating the need to bring your book to class. When you use the Tablet in class it will always be in the locked down position only. The computer should never have the screen upright causing a distraction to everyone behind you. Noncompliance with this policy will be cause for dismissal from class.
**Electronic Devices Policy.** Please turn off your cell phone before class starts. No text messaging in class. No headphones. This is a tablet PC class so you are required to bring your tablet to class each time we meet (fully charged). 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). No other use of any other electronic/computer media is allowed during class time.

6. **Correspondence:** If a student has a question that needs just a short answer the best time is before or after class. Email should be limited and I will only respond to proper addresses (i.e. no text messaging or incorrect language). If a student does this or asks a question that could have been answered by reading this syllabus they will receive my standard response letter. If you have a detailed question or one pertaining to future absences in class please stop by my office (OG205) or speak to me before class.

**Course Objective:** Students will obtain a foundation in the fundamental principles and models of chemistry necessary for an understanding of the composition, structure, and properties of matter and the changes that matter undergoes.

**Course Outcomes:**

- Understand, and use correctly, the symbolic representations, chemical notation, formulas, and systematic rules of nomenclature that characterize the language of chemistry.
- Understand and apply the mole concept in a variety of chemical calculations, including calculating the number of particles in a given mass of substance (and vice versa), and the quantitative relationships between reactants and products in a chemical reaction.
- Recognize the different types of chemical transformations: acid-base, precipitation, combination, decomposition, single-replacement, oxidation-reduction, double replacement, and combustion.
- Understand the basic principles of energy transfer involving chemical systems, including the transfer of heat and work between system and surroundings, the qualitative and quantitative interpretation of thermochemical equations, and the application of Hess’s Law.
- Understand the various models of atomic structure, the basic principles of quantum theory, and the experiments that led to those principles.
- Write ground-state electron configurations for atoms and ions of any representative element and the 3d transition series elements.
- Understand the fundamental aspects of chemical bonding, including writing Lewis structures, describing the bonding in molecules by simple valence-bond theory, and using Valence Shell Electron Pair Repulsion Theory to predict the geometries of molecules and ions.
- Use modern atomic theory to understand and predict the properties of different elements.
- Understand the properties of the different states of matter.
- Qualitatively and quantitatively describe the properties of the gaseous state and the fundamental laws governing the behavior of gases.
- Understand, qualitatively and quantitatively, the behavior of solutions and their colligative properties.
- Understand how fundamental intermolecular interactions among particles determine the physical and chemical properties of a system.
- Understand the fundamental postulates of kinetic-molecular theory and use them to explain the physical behavior of the three states of matter.

This syllabus is subject to change throughout the semester.