

**GENERAL CHEMISTRY**  
**CHEM 1010**  
**Summer, 2013**

**Instructor:** Dr. Todd A. Wells  
Physics, Room 205  
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**Text:** *Chemistry*, 3rd Edition, Gilbert, Kirss, Foster, & Davies (2012) WW Norton & Company (available at the DU Bookstore).

**Lectures:** 920-11:20 a.m., MTWRF, BA 102  
**Lab:** 12:00PM-3:00PM, MTWR, Olin 225

**Quizzes/Exams:** There are 4 quizzes during the summer, plus a two-hour cumulative final exam. Each quiz counts 50 points. Quiz/Exam problems will be similar to the problems assigned as homework and the problems worked in class. If you miss an hour exam, then your final exam will be counted twice and replace the missed hour exam. You must inform your instructor of this prior to the exam and make arrangements at that time for a makeup exam. **Your lowest quiz grade will be dropped..**

**Homework:** Each lecture has a group of homework problems assigned to it. The problems are taken from the Problems section at the end of each chapter, and are chosen to prepare you for the quizzes/exams. You must complete the homework on Norton's online site Smartworks.com. If you understand and can do all the homework, you probably will do well on the quizzes/exams. There are many additional problems at the end of each chapter, grouped according to subject area. It is a good idea to work some of these extra problems in the areas where you are having difficulties. To get the most benefit from homework, you should **do the assignments on schedule**. While homework other than Smartworks will not be graded, it is important to keep up with these assignments!

**Grading:** Your final grade is based on a maximum of 450 points, distributed as follows:

<b>Quizzes (100 points each):</b>	<b>200 points</b>
<b>Online Homework</b>	<b>100 points</b>
<b>Final exam:</b>	<b>150 points</b>

The assignment of a letter grade (A, B, C, etc.) to a given numerical grade is a somewhat flexible procedure and depends on the overall class performance. Grades, however, will not be fitted to a statistical bell-shaped normal distribution. If the overall class performance is high, it is possible to have a distribution with predominantly A's and B's and relatively few lower grades.

## TOPICS COVERED

### QUANTUM-MECHANICAL MODEL OF THE ATOM

- Introduction / Atomic spectra
- Quantum-Mechanical Model
- Many-Electron Atoms

### CHEMICAL PERIODICITY

- Periodic Table
- Atomic Properties
- Chemical Reactivity

### CHEMICAL BONDING AND MOLECULAR SHAPE

- Ionic Bonding
- Covalent Bonding
- Lewis Structures
- VSEPR Theory
- Bond and Molecular Polarity
- Valence Bond Theory
- Types of Covalent Bonds
- Molecular Orbital Theory

### CHEMICAL REACTIONS

- Water as a Solvent
- Precipitation and Acid-Base Reactions
- Acids, bases and pH
- Oxidation-Reduction Reactions
- Balancing Redox Reactions
- Voltaic cells and cell potential

### THERMOCHEMISTRY AND THERMODYNAMICS

- Enthalpy
- Calorimetry
- Heats of Reaction
- Entropy
- Free Energy