Chemistry 1411.020
General Chemistry I
Summer I 2019
June 3 – July 3, 2019

Dr. Janet L. Maxwell
janet.maxwell@angelo.edu

Cav 229B, 942-2064, ext. 6624
Office Hours: MWF 8:00 – 8:50 am
or by appointment

Required Texts:

Also Required:
- A scientific calculator (Bring your calculator to lab and to class every day)
- Approved Safety Goggles

Course Description: In this class, you will study the fundamental laws and theories of chemistry, chemical nomenclature, chemical equilibrium, metals and non-metals and their compounds, nuclear chemistry and the quantum theory of structure.

Grading:
- Three One-Hour Exams 3 x 100 = 300 pts
- One Two-Hour Final Exam (comprehensive)* 1 x 150 = 150 pts
- Quizzes 8 x 20 = 160 pts
- (9 quizzes will be given; the lowest quiz grade will be dropped; no make-ups will be given for quizzes)
- Smartwork Online Homework Grade 190 pts
- Lab Grade 10 x 20 = 200 pts
- Total = 1000 pts

*The final exam will be the one semester comprehensive standardized ACS exam for General Chemistry

Total scores within the following ranges at the end of the semester guarantee the student at least the indicated letter grade:

- A 900-1000 pts (90% of the total or better)
- B 800-899 pts (80-89% of the total)
- C 700-799 pts (70-79% of the total)
- D 600-699 pts (60-69% of the total)
- F 0-599 pts (less than 60% of the total)

Deadline: Last Day to drop the course: Monday, June 24, 2019

Attendance Policy: Roll will be taken each class period.

Disabilities: Persons with disabilities which may warrant academic accommodations must contact the Student Life Office, Room 112, University Center, in order to request and to implement academic accommodations.

Quizzes: Quizzes will be given as shown in the course schedule on the last page of this syllabus. Quizzes will be worth 20 points and the quiz topic will be announced during the previous day’s class. The student’s lowest
quiz grade will be dropped. Make-up quizzes will not be given for any reason.

Calculators: Students are expected to bring a scientific calculator to class every day, including days with quizzes or exams. The calculator may be a graphing calculator, or just a regular scientific calculator. Students may NOT use cell phones in place of calculators during quizzes or exams. The instructor reserves the right to inspect calculators for non-authorized programming and/or content during a test or quiz. Any student having non-authorized programming and/or content on his or her calculator during a test or quiz will automatically fail the course.

Make-up Exam Policy: Students will only be allowed to take one make-up exam if there is an illness or emergency which is documented in writing. In order for a student to be eligible to take a make-up exam, the student must notify Dr. Maxwell before the exam is missed by telephone, voice mail or email. When a student returns to class after missing an exam, he or she must present a document such as a doctor’s note or funeral notice in order for Dr. Maxwell to give permission for a make-up exam. Make-up exams need to be scheduled with Dr. Maxwell. Each student may take no more than one make-up exam for any reason whatsoever.

Policy on Academic Dishonesty: Students are expected to work independently on quizzes, exams and lab reports. See the ASU Student Handbook for definitions of cheating and plagiarism. Any student who is caught cheating or plagiarizing in this class will be subject to failure in the course and possible suspension from the University. Cheating and/or plagiarism will not be tolerated! Angelo State University expects its students to maintain complete honesty and integrity in their academic pursuits. Students are responsible for understanding the Academic Honor Code (www.angelo.edu/cstudent/).

Online Homework System: Smartwork is an online homework program which accompanies the Gilbert textbook. The Chapter 10 assignment will be worth 10 points. The other 9 one-chapter assignments (Chapters 1-9) will be worth 20 points each. Although each homework assignment appears to be worth different values on the Smartwork system, they will be normalized to be worth 10 or 20 points when entered into blackboard. To enroll in Smartwork, go to http://wwnorton.knowledgeowl.com/help/smartwork5-students-getting-started

You will need:
1. A valid email address
2. The enrollment key for your course: 143729.
3. A registration code from W.W. Norton or the use of a credit card. This proof-of-purchase allows you to access the course after your free two-week trial period expires. IF YOU ARE PLANNING TO TAKE CHEM 1412 this summer as well as 1411, DO NOT PURCHASE A SINGLE USE ACCESS CODE. The assignments and due dates for Smartwork can be found on the Smartwork home page for our course. The enrollment key for our course is 143729. Note: “Getting Familiar with SW5 Question Types” is an optional assignment for which there is no credit.

Blackboard: Blackboard is a computer learning environment to help you with your studies. To log onto blackboard, type in http://blackboard.angelo.edu into your web browser. Then click the grey “Login” button to the left of
the screen. Next type in your username and password. Your username and password are assigned by IT. Please see Dr. Maxwell if you have trouble logging onto Blackboard.

Cell phone policy: In regular class sessions and during exams, all cell phones must be set to silent alert. If a student’s cell phone rings audibly during an exam, the student will have to turn in their exam and not be allowed to make up the exam. Students are not allowed to use cell phones during exams and quizzes for any reason whatsoever. I will make every effort to remind you to turn off the ringers on your cell phone by posting signs and giving verbal reminders. Thank you for respecting the rights of your fellow classmates by turning off the ringer on your phone during class.

Lab Course: The lab course will give you practical experience in many common laboratory techniques. Attendance in lab is a mandatory part of this course. There will be a total of 10 labs worth 20 points each. Labs will begin meeting the first day of scheduled lab classes on Tuesday, June 4. Bring your calculator!

Mandatory Laboratory Safety Training and Quiz: All students who have not previously done so must take the Blackboard Laboratory safety training and quiz. Log onto Blackboard and click on “Lab Safety Training”. Under the left hand menu, choose “Get Started Here”. There are three sections: 1) Welcome to Lab Safety Training --There are your instructions. 2) Lab safety training --Click on "Lab Safety - Click here to begin" --This will download a Powerpoint slide show which will cover the safety training. 3) The lab safety quiz. You must score 90% or higher. **Students who are required to pass the Safety Quiz will not be allowed to attend lab without passing the quiz starting Wednesday, June 5.** There will be no exceptions to this rule.

Lab Reports: Instead of having a lab manual for this course, all lab materials will be posted on blackboard. The materials include a description of the background for each experiment, pre-laboratory questions that will be turned in at the beginning of the lab period, a procedure for the experiment, and a lab report form which must be handed in when the lab is completed.

Laboratory Attire: Beginning on the first day of lab, everyone MUST have approved goggles, long-sleeved shirts which cover the midriff, long pants, and shoes with closed toes and heels (no sandals, slides, etc. Basically, you should have as little exposed skin as possible.) Anyone not wearing the appropriate attire will not be allowed into lab.

Lab Clean up: Before a student can leave the lab at the end of the experiment, he or she must make sure that the bench area is clean, that all electrical equipment has been unplugged and all faucets turned off, and that no solids have been left in the sinks. In the common areas, all of the hoods and balances must be clean and all reagent bottles must be capped. If reagent bottles are found uncapped during or after the lab or if the common areas are found dirty or with things that are not supposed to be there at the end of the lab, then clean-up points will be deducted from the grades of all lab students in that section for that experiment. If a particular bench is found dirty or with things that are not supposed to be there, then clean-up points will be deducted from all
the students using that bench. If the instructor can determine who is responsible for a particular mess, then the clean-up points will be deducted only from the grades of the student or students responsible. If not, then clean-up points will be deducted from all students in the section for messes in common areas and from all students on a particular bench for messes on that bench. No points will be deducted for broken glassware as long as it is cleaned up and reported to the instructor.

Make-up Lab Policy: The make-up lab will be held on July 1 at 11:00 am. All students making up a lab will do the Emission Spectra of Atoms lab. Students cannot make up more than one lab.
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<tr>
<th>Date</th>
<th>Lecture:</th>
<th>Lab:</th>
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<tbody>
<tr>
<td><strong>M</strong> June 3</td>
<td>Chapter 1: Particles of Matter — Composition of Matter, States of Matter, Measurements, SI Units, Unit Conversions, Temperature Scales</td>
<td>Take Home Assignment: “Scientific Measurement and Presentation of Data” This assignment must be completed before lab on June 4 (20 pts) Mandatory Lab Safety Training and Quiz — instructions given in Lab Safety Training section (must be completed before lab on June 5)</td>
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<td><strong>T</strong> June 4</td>
<td>Quiz 1 (end of class) Chapter 1, cont. Chapter 2: Atoms, Ions, and Molecules — Nuclear Model, Atomic Mass, Periodic Table, Molecular and Ionic Compounds, Naming Compounds and Writing Formulas</td>
<td>“Scientific Measurement and Presentation of Data” Take-Home Assignment due at 11:00 am Safety Lecture Precision and Accuracy Significant Figures Lab 1: Measurement of Mass, Volume and Density (20 pts)</td>
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<td><strong>W</strong> June 5</td>
<td>Chapter 2, cont.</td>
<td>Lab 1 Report due at 11:00 am Lab 2 : Percentage of Potassium chloride in a Mixture (20 pts)</td>
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<td><strong>R</strong> June 6</td>
<td>Quiz 2 (end of class) Chapter 3: Stoichiometry — The Mole Concept, Balancing Equations, Stoichiometry, Percent Composition, Limiting Reactants</td>
<td>Lab Report 2 due at 11:00 am Lab 3: Determination of Avogadro’s Number (20 pts)</td>
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<td><strong>F</strong> June 7</td>
<td>Chapter 3, cont.</td>
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<td><strong>M</strong> June 10</td>
<td>Quiz 3 (end of class) Chapter 3, cont. Smartwork Ch 3 HW due 11:59 pm (20 pts)</td>
<td>11 am Optional Review Session for Exam 1</td>
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<td><strong>T</strong> June 11</td>
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<td>Exam 1 (Ch 1-3) Cav 200</td>
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<td><strong>W</strong> June 12</td>
<td>Chapter 4: Reactions in Solution — Concentration, Electrolytes, Acid-Base Reactions, Precipitation Reactions, Redox Reactions</td>
<td>Lab 3 Report due at 11:00 am Lab 4: Titration of Vinegar (20 pts)</td>
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<td><strong>R</strong> June 13</td>
<td>Quiz 4 (end of class) Chapter 4, cont. Smartwork Ch 4 HW due 11:59 pm (20 pts)</td>
<td>Lab 4 Lab Report due at 11:00 am Lab 5: Percentage Water in a Hydrate (20 pts)</td>
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| M     | June 17  **Quiz 5 (end of class)**  
Chapter 5, cont.  
Smartwork Ch 5 HW due 11:59 pm (20 pts) | 11 am Optional Review Session for Exam 2 |
| T     | June 18  Exam 2 (Ch 4-5)  
Cav 200 |                                           |
| W     | June 19  Chapter 6: Properties of Gases — Pressure, The Gas Laws, the Ideal Gas Law, Gas Density, Dalton’s Law, Kinetic-Molecular Theory | Lab 5 Report due at 11:00 am  
Lab 6: Specific Heat Capacity (20 pts) |
| R     | June 20  **Quiz 6 (end of class)**  
Chapter 6, cont.  
Smartwork Ch 6 HW due 11:59 pm (20 pts) | Lab 6 Report due at 11:00 am  
Lab 7: Heats of Reaction: Hess’s Law (20 pts) |
| M     | June 24  **Quiz 7 (end of class)**  
Chapter 7, cont.  
Smartwork Ch 7 HW due 11:59 pm (20 pts) | 11 am Optional Review Session for Exam 3 |
| T     | June 25  Exam 3 (Ch 6-7)  
Cav 200 |                                           |
| W     | June 26  Chapter 8: Chemical Bonds — Lewis Structures, Covalent Bond, Polar Bonds, Resonance, Exceptions to the Octet Rule | Lab 7 Report due at 11:00 am  
Lab 8: Gas Laws lab (20 pts) |
| R     | June 27  **Quiz 8 (end of class)**  
Chapter 8, cont.  
Smartwork Ch 8 HW due 11:59 pm (20 pts) | Lab 8 Report due at 11:00 am  
Lab 9: Lewis Structures, VSEPR, Polarity (20 pts) |
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<th>Lab:</th>
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<tr>
<td>F</td>
<td>June 28</td>
<td>Chapter 9: Molecular Geometry — VSEPR, Bond Energies to Reaction Energies, Valence Bond Theory, MO Theory</td>
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| M    | July 1   | Quiz 9 (end of class)  
Chapter 10: Intermolecular Forces — Intermolecular Forces, Vapor Pressure, Phase Diagrams, Water  
Smartwork Ch 9 HW due 11:59 pm (20 pts)  
Lab 9 Report due at 11:00 am  
Makeup Lab: The Emission Spectra of Atoms |
| T    | July 2   | Chapter 10, continued  
Smartwork Ch 10 HW due 11:59 pm (10 pts)  
Makeup Lab Report due at 11:00 am  
11 am Optional Review Session for Final Exam |
| W    | July 3   | 9:00 am ACS Final Exam  
(one semester comprehensive)  
CAV 200 |

Note: the lowest quiz grade will be dropped. No exam grades will be dropped.

Learning Goal 1: Students will be able to analyze complex chemical problems and draw logical conclusions.
- Students will be able to use an understanding of atomic structure at the basic and atomic levels to analyze the structure and reactivity of substances and chemical species.
- Students will be able to use an understanding of how energy interacts with matter to predict stable chemical species, and perform thermodynamic calculations describing chemical reactions.

Learning Goal 2a: Students will be able to understand and apply scientific reasoning in the chemical sciences.
- Students will be able to use an understanding of ions and molecules at the atomic level to predict the behavior of reactions in aqueous solutions.
- Students will be able to use the basic ideas of quantum mechanics to describe how molecular bonds form and to predict molecular shape and polarity. Molecular structure and polarity will be used to predict the forces between molecules and relate those forces to the states of matter and phase changes. Learning Goal 2b: Students will be able to employ mathematics in the analysis of chemical problems.
- The mole concept, chemical formulas and balanced chemical equations will be used to do chemical calculations that relate macroscopic measurements to numbers of atoms, ions or molecules.
- Students will be able to do calculations involving solution concentration and know how to prepare solutions of given concentrations.
- Students will be able to quantitatively predict gas properties using gas law calculations.
Learning Goal 3: Students will be able to demonstrate technical and analytical skills in chemistry.

- Students will be able to use the periodic table to determine basic atomic information and to predict trends in atomic properties.
- Students will be able to interconvert between chemical names and formulas to the extent that they can work problems given only one of those pieces of information.
- Students will be able to classify common types of chemical reactions and predict the outcomes of reactions.

Evaluation of Student Learning Outcomes: Student learning outcomes will be evaluated by test questions or by the grading of in-classroom activities, as described by your instructor.

Texas Higher Education Coordinating Board Natural Sciences Objectives: The objective of the study of a natural sciences component of a core curriculum is to enable the student to understand, construct, and evaluate relationships in the natural sciences, and to enable the student to understand the basis for building and testing theories.

Exemplary Educational Objectives

1. To understand and apply method and appropriate technology to the study of natural sciences.
2. To recognize scientific and quantitative methods and the differences between these approaches and other methods of inquiry and to communicate findings, analyses, and interpretation both orally and in writing.
3. To identify and recognize the differences among competing scientific theories.
4. To demonstrate knowledge of the major issues and problems facing modern science, including issues that touch upon ethics, values, and public policies.
5. To demonstrate knowledge of the interdependence of science and technology and their influence on, and contribution to, modern culture.