Syllabus  CHEM 1405 --- Elements of Chemistry --- Fall 2018

Faculty Information
Dr. Steven King
Office: CAV 214B
Phone: 486-6625
Email: Steven.King@angelo.edu
Office hours: MWF 8:00 am - 9:00 am, TR 8:00 am – 9:00 am
Or by appointment

CHEM 1401 Classes

<table>
<thead>
<tr>
<th>SEC</th>
<th>Days</th>
<th>Time</th>
<th>Instructor</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>010</td>
<td>MWF</td>
<td>10:00 am - 10:50 am</td>
<td>Dr. King</td>
<td>MCS 100</td>
</tr>
<tr>
<td>020</td>
<td>TR</td>
<td>9:30 am - 10:45 am</td>
<td>Dr. King</td>
<td>CAV 223</td>
</tr>
</tbody>
</table>

Required Supplies

Textbook
Introductory Chemistry: Foundation (Hybrid Ed (w/Access) Edition: 8th
Zumdahl • DeCoste  Recommend rental

eBook
Less expensive than textbook. Purchase at bookstore or online at cengage.com/unlimited

Top Hat

Scientific Calculator

Course Description
A survey of the fundamentals of chemistry. An introduction to organic and physiological chemistry and a survey of the chemistry of environmental systems.

Grading

<table>
<thead>
<tr>
<th></th>
<th>Points Breakdown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hour Exams: 3 @ 110 1 @ 70</td>
<td>A = 90-100 % 900-1000 pts</td>
</tr>
<tr>
<td>Final Exam 100 pts</td>
<td>B = 80-89.9% 800-899 pts</td>
</tr>
<tr>
<td>OWL Homework 200 pts</td>
<td>C = 70-79.9% 700-799 pts</td>
</tr>
<tr>
<td>Laboratory 150 pts</td>
<td>D = 60-69.9% 600-699 pts</td>
</tr>
<tr>
<td>Quizzes 100 pts</td>
<td>F = &lt;60% 0-599 pts</td>
</tr>
<tr>
<td>Attendance 50</td>
<td></td>
</tr>
<tr>
<td>TOTAL 1000</td>
<td></td>
</tr>
</tbody>
</table>

Hour Exams
Most hour exams will cover material presented since the previous exam. However, the course builds on material delivered earlier, so the concepts, calculations, and techniques from earlier exams may be required.
Make-up Exams
Make-up exams will be at the discretion of your course instructor. Usually, allowances will only be made in the case of an excused university absence. Communication with your instructor prior to the exam date is **CRITICAL**.

Final Exam
The schedule for the 1405 final exams is shown below. The complete final exam schedule is available on the web: http://www.angelo.edu/services/registrar's_office/final.html

<table>
<thead>
<tr>
<th>Section</th>
<th>Class Days</th>
<th>Class time</th>
<th>Final Exam Date</th>
<th>Final Exam Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>010</td>
<td>MWF</td>
<td>10:00 am - 10:50 am</td>
<td>Monday, Dec 10</td>
<td>10:30 am – 12:30 pm</td>
</tr>
<tr>
<td>020</td>
<td>TR</td>
<td>9:30 am - 10:45 am</td>
<td>Thursday, Dec 13</td>
<td>8:00 am - 10:00 am</td>
</tr>
</tbody>
</table>

Attendance – Effects your final grade
You are expected to attend all class meetings. You are expected to arrive on time and to stay until the end of the lecture. You will not be automatically dropped if you stop attending class. If you have the FLU, please stay home. Do not help spread the flu to everyone else. Keep your instructor informed by email (preferred) or telephone (if necessary). Your instructor will work with you to keep you up to date in the class. **DO NOT USE CELL PHONE.**

Last Day to Drop
The last day to drop the course with a grade of “W” is Thursday Nov 1st.

Blackboard
Grades, information, handouts, homework assignments, and other course documents will be posted on Blackboard. http://blackboard.angelo.edu (or access Blackboard from Ramport). Students are expected to check Blackboard daily and will be held responsible for all announcements, assignments posted to Blackboard.

Honor Code / Academic Dishonesty
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, which is found in the Student Handbook (www.angelo.edu/cstudent/). The penalty for ANY sort of dishonesty, cheating or plagiarism can range from a grade of zero on assignments to an F in the course and disciplinary action warranted in accordance with university guidelines.

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.
Observances of Religious Holidays

A student who intends to observe a religious holy day should make that intention known in writing (email) to me prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within what the instructor deems a reasonable time after the absence.

COMPUTER HOMEWORK
OWL is an online homework program which accompanies the Zumdahl • DeCoste textbook. These assignments will be averaged to give a maximum 200-POINT GRADE.

MWF  https://login.cengagebrain.com/course/E-228H5834MT38J
TR  https://login.cengagebrain.com/course/E-228H2GXYWN8KE

LECTURE SCHEDULE AND APPROXIMATE EXAM CUT-OFF POINTS --- SPRING 2018

<table>
<thead>
<tr>
<th>Week of</th>
<th>Topic / textbook sections</th>
</tr>
</thead>
</table>
| Aug 27  | Syllabus, Introduction, Significant digits, units, conversion factors, density – 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.8  
Matter – 3.1, 3.2, 3.3 |
| Sep 3   | Monday 9/03, Labor Day Holiday  
Element names and symbols – 4.1, 4.2, 4.3, 4.4  
Atomic structure and periodic table – 4.5, 4.6, 4.7, 4.8, 4.9, 4.10, 4.11  
Atomic Theory 11.1, 11.4, 11.5, 11.6, 11.7, 11.8, 11.9, 11.10, 11.11 |
| Sep 10  | Binary ionic compounds – 5.1, 5.2  
Binary covalent compounds – 5.3, 5.4 |
| Sep 17  | Exam 1 Wed, Sep 19, Thu Sep 20  
Covalent bonding – 12.1, 12.2, 12.3, 12.4, 12.5, 12.6, 12.7, 12.8  
Polyatomic ions - 5.5, Acids and Bases – 5.6 |
| Sep 24  | Chemical reactions – 6.1, 6.2, 6.3  
Type of reaction handout |
| Oct 1   | Moles – 8.3, 8.4, 8.5 |
| Oct 8   | Stoichiometry calculations – 9.1, 9.2, 9.3 |
| Oct 15  | Exam 2 Wed, Oct 17, Thu Oct 18  
Energy 10.1, 10.2, 10.3, 10.4, 10.5, 10.6, 10.7, 10.8, 10.9, 10.10 |
| Nov 5   | More definitions of acids and bases – 16.1, 16.2, 16.3  
Exam 3 Wed, Nov 7, Thu, Nov 8 |
| Nov 12  | pH Scale – 16.4 |
Elements of Chemistry Laboratory

Laboratory Course
The laboratory class is designed to illustrate some of the principles involving performing scientific measurements, handling chemicals, and performing chemistry experiments.

Laboratory Manual: None. Experiment handouts will be given out in lab.

Laboratory Safety Requirements

**Mandatory Laboratory Safety Training and Quiz**

Login to Blackboard
Choose the course:
"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. You can take it again in 24 hours.

*** YOU WILL NOT BE ALLOWED TO PERFORM LABORATORY EXPERIMENTS UNTIL THIS IS COMPLETED. FAILURE TO FINISH THE TRAINING WILL RESULT IN A GRADE OF ZERO FOR EACH LABORATORY SESSION MISSED.***
Eyewear: Eyes are extremely vulnerable to tragic and irreversible injuries and **safety goggles** must be worn at all times. This protects the eyes from splashes as well as impact damage.

**Laboratory dress code:** Skin can be easily harmed and should be covered as much as possible while conducting experiments in the lab. To this end, the following are requirements apply.

- Long sleeve clothing that covers the upper body, arms, and midriff
- Long pants extending to top of shoe
- You may not wear jeans with large holes in them.
- No shorts
- No scarves
- Closed toed and closed heel shoes.
- Long hair should be pulled back especially when working with flame or chemicals.
- Failure to follow these guidelines will result in your dismissal from the laboratory and a grade of ZERO for the day.

**Required Supplies**
Approved safety goggles.

**CHEM 1405 Labs Schedule**

<table>
<thead>
<tr>
<th>SEC</th>
<th>Days</th>
<th>Time</th>
<th>Instructor</th>
<th>Lab Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>03Z</td>
<td>M</td>
<td>2:00 p.m. - 3:50 p.m.</td>
<td>Dr. King</td>
<td>Cav 223</td>
</tr>
<tr>
<td>04Z</td>
<td>T</td>
<td>2:00 p.m. - 3:50 p.m.</td>
<td>Dr. King</td>
<td>Cav 223</td>
</tr>
<tr>
<td>05Z</td>
<td>W</td>
<td>2:00 p.m. - 3:50 p.m.</td>
<td>Dr. King</td>
<td>Cav 223</td>
</tr>
<tr>
<td>06Z</td>
<td>R</td>
<td>2:00 p.m. - 3:50 p.m.</td>
<td>Dr. King</td>
<td>Cav 223</td>
</tr>
</tbody>
</table>

Labs will begin meeting the first day of class.

**Attendance**
You are expected to attend all laboratory meetings. You are expected to arrive on time and to stay until the end of the laboratory experiment is completed. You will not be automatically dropped if you stop attending class.

If you have the **FLU**, please stay home. Do not help spread the flu to everyone else. Keep your instructor informed by email (preferred) or telephone (if necessary). Your instructor will work with you to make-up labs.

**Make-up Labs:** Missed labs can be made up with permission of the instructor during a regularly scheduled lab period (see schedule below) and during the same week you missed the lab.

**Laboratory Schedule**

<table>
<thead>
<tr>
<th>Week of</th>
<th>Experiment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug 27</td>
<td>Check-in and Safety</td>
</tr>
<tr>
<td>Date</td>
<td>Activity</td>
</tr>
<tr>
<td>--------</td>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>Sep 3</td>
<td><strong>NO LAB</strong></td>
</tr>
<tr>
<td>Sep 10</td>
<td>Math Review, Atomic Structure Worksheet, Chromatography</td>
</tr>
<tr>
<td>Sep 17</td>
<td>Identifying Ions by Flame Tests</td>
</tr>
<tr>
<td>Sep 24</td>
<td>O₂ Demonstration</td>
</tr>
<tr>
<td>Oct 1</td>
<td>Iron Lab</td>
</tr>
<tr>
<td>Oct 8</td>
<td>Chemical Moles: Soda to Table Salt</td>
</tr>
<tr>
<td>Oct 15</td>
<td>Graham’s Law</td>
</tr>
<tr>
<td>Oct 22</td>
<td>Percent Water in a Hydrate</td>
</tr>
<tr>
<td>Oct 29</td>
<td>Solutions Demonstration</td>
</tr>
<tr>
<td>Nov 5</td>
<td>Acetic Acid Content of Vinegar</td>
</tr>
<tr>
<td>Nov 12</td>
<td>Rates of Chemical Reactions</td>
</tr>
<tr>
<td>Nov 19</td>
<td>Thanksgiving</td>
</tr>
<tr>
<td>Nov 26</td>
<td>Slime</td>
</tr>
</tbody>
</table>

**STUDENT LEARNING OUTCOMES**

After completion of this course students will be able to:
- Analyze complex problems and draw logical conclusions.
- Employ mathematics in the analysis of chemical problems.
- Apply chemical concepts to contemporary societal problems.

**Evaluation of Student Learning Outcomes**

Student learning outcomes will be evaluated through written laboratory reports for each of the exercises listed above. No lab grades will be dropped; therefore attendance at all laboratory meetings is essential.

**Texas Higher Education Coordinating Board Natural Science 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 differences between the approaches and other methods of inquiry and to communicate findings, analyses, and interpretations both orally and in writing.
3. To demonstrate knowledge of the major issues and problems facing modern science, including issues that touch upon ethics, values, and public policies.

**ASU Core Curriculum Objectives for Chemistry 1401**

Students in Chemistry 1401 will apply the following core curriculum learning objectives in critical thinking, communications, and teamwork.

**Critical thinking will be demonstrated by class performance.**
- Students will use their knowledge of chemical concepts to analyze problems related to topics discussed in class and choose the correct course of action to solve the problems.

**Communication will be demonstrated by preparing laboratory reports.**
- Students will organize and write a report clearly explaining the purpose, procedure, results and conclusion of a laboratory experiment.

**Empirical and quantitative skills will be demonstrated by using equations to answer problems.**
- Choose the appropriate equation and rearrange to solve for the unknown.
- Complete mathematical operations and report correct answer.

**Teamwork will be demonstrated using in-class projects.**
- Students will work in groups to complete an assignment and prepare a single report.

**Syllabus may be modified at the discretion of the instructor. Timely notification will be announced in class and posted in Blackboard.**