

FACULTY INFORMATION

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CHEM 1411 LECTURE CLASSES

Lecture Class Schedule

Sec	Days	Time	Instructor	Location
010	MWF	10:00 am-10:50 am	Dr. Carter	CAV 200
020	TR	08:00 am-09:15 am	Mr. Boudreaux	CAV 200

Required Supplies

- **Textbook and SmartWork online homework [Both Required]:**
Thomas R. Gilbert, Rein V. Kirss, Natalie Foster, Stacey Lowery Bretz, Geoffrey Davies,
Chemistry: The Science in Context (5th edition, 2018).
Purchasing Options:
 1. Textbook (printed) + eBook + SmartWork
 2. eBook + SmartWork
 3. SmartWork only (only if you get a textbook from another source that does not include SmartWork.)Options 1 and 2 are available from the ASU Bookstore or directly from the publisher at the [Norton website](#).¹
Option 3 is only available from the publisher.
- **Lab Manual [Required]:** Zumdahl, Zumdahl, Osborne, *Angelo State University Chemistry 1411* (2017)
- **Approved Lab Goggles [Required]** (available from the ASU Bookstore or from the lab stockroom)
- **Calculator [Required]:** Scientific calculator capable of performing calculations with scientific notation and logarithms. *Bring your calculator to class and to lab every day. Only non-programmable calculators may be used on the exams.*

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. **Prerequisites:** Chemistry 1411 is to be completed before Chemistry 1412. Proficiency in algebra required. Only students eligible to take college-level mathematics courses may take Chemistry 1411.

Grading

Category	Points Possible
Exams (3×100 pts)	300 pts
Final	150 pts
Quizzes, classroom participation	150 pts
SmartWork Homework	200 pts
Laboratory	200 pts
Total	1000 pts

Grade	Percent	Points
A	90-100%	900-1000 pts
B	80-89.9%	800-899 pts
C	70-79.9%	700-799 pts
D	60-69.9%	600-699 pts
F	<60%	0-599 pts

Reserve Material

Most of the slides which are projected on the LCD projector are available on my faculty web page.² (There is also a link to this page from the “Our Faculty” section of the Department of Chemistry and Biochemistry web page.³) Homework and exam schedules, suggested problems, and other materials will also be posted here. **The printed lecture notes do *not* contain all of the information presented during the class, such as solutions to the example problems. You should take good notes anyway.**

Quizzes / Classroom Participation

Quizzes will be given *every day*, at the beginning of class. They will be based on material presented since the previous quiz, and will be taken primarily from the problems in the textbook. There will be approximately 12 to 15 quizzes, worth 100 points each; the lowest two quiz grades will be dropped from the total; and the remaining quiz grades will be averaged together on a 100-point scale. **NO MAKEUP QUIZZES WILL BE GIVEN.**

The other 50 points on the “Quizzes / Classroom Participation” score are based on attendance in class. Two points will be taken off the 50-point Classroom Participation grade for each class missed.

Studying and Homework

The lectures will follow the general format for the textbook; it is expected that you will read the appropriate sections in the textbook. **In general, for any college-level class, you should be prepared to spend about 2-3 hours of studying for each hour of lecture.**

In order to master chemistry, you **MUST WORK PROBLEMS**. This textbook has a good selection of problems within each chapter and at the end of each chapter. You should make an effort to work all of the problems within the text of the chapter; in addition, I will highlight some selected problems from the end of the chapter that you should try to work. You can expect to see

a lot of these (or at least similar ones) on the exams.

Review Sessions and Supplemental Instruction

Review sessions will be held weekly on Mondays at 1 pm (location to be announced later). During these sessions, I will work problems from the book, review concepts presented in the lecture, go over problems from the homework, or anything else that you may have questions about. These sessions should give you a chance to enhance your understanding of chemistry, and hence, your grade.

For this course, a Supplemental Instruction tutoring program may be available. A schedule of SI sessions, or other tutoring information, will be announced when it is available.

Exams

The exams will be given outside of regular class time on the dates listed in the table below:

Exam	Date	Room	Time	Point Value
Exam 1	Thursday, February 14	CAV 200	5:30 pm	100 pts
Exam 2	Thursday, March 21	CAV 200	5:30 pm	100 pts
Exam 3	Thursday, April 25	CAV 200	5:30 pm	100 pts

Most of the exams will be over material covered since the last exam. However, the course builds on material delivered earlier so the concepts, calculations and techniques from earlier exams may be required. **Only non-programmable calculators may be used on the exams (i.e., no graphic calculators are allowed).**

Make up exams will be at the discretion of your individual faculty. Usually, allowances will only be made in the case of an excused university absence. Communication with your instructor is critical.

Final Exam Schedule

The Final Exam will be a comprehensive multiple-choice standardized exam published by the American Chemical Society (ACS). Study guides for the ACS exam (“General Chemistry - Official Study Guide”) are available for sale in the lab stockroom and from the [ACS web page](#).⁴ The schedule for the 1411 final exams is shown below. The complete final exam schedule is also available on the [ASU web page](#).⁵

Sec	Days	Time	Instructor	Final Exam Date	Final Exam Time
010	MWF	10:00 am-10:50 am	Dr. Carter	Monday, May 6	10:30 am - 12:30 pm
020	TR	08:00 am-09:15 am	Mr. Boudreaux	Tuesday, May 7	8:00 am- 10:00 am

SmartWork Computer Homework

SmartWork is an online homework program which accompanies the [Gilbert textbook](#).⁶ These assignments will be averaged to give a 200-point grade. To register with SmartWork, follow the instructions in the “Smartwork Student Registration” handout.

Blackboard

Grades will be posted on [Blackboard](#).⁷ Information, handouts, homework assignments, and other course documents will either be posted on your instructor’s faculty web page, or on Blackboard.

Attendance

You are expected to attend all class meetings. You are expected to arrive on time and to stay until the end of the lecture. In-classroom activities such as worksheets and quizzes cannot be

made up. 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 professor informed as to your status by email (preferred) or telephone (if necessary). Your faculty will work with you to keep up to date in the class.

Last Day to Drop

The last day to drop the course with a grade of “W” is **Thursday, March 28, 2019**.

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 to be found in the [Student Handbook](#).⁸ The penalty for ANY sort of dishonesty, cheating or plagiarism can range from a grade of zero on the assignment to a F in the course and disciplinary action as warranted in accordance with university guidelines. Don't even consider it.

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.

CHEM 1411 LAB CLASSES

The lab classes that accompany the CHEM 1411 lecture course are shown in the table below. The labs will generally meet for pre-lab lectures in the Class Room listed in the table.

Section	Day	Meeting Time	Instructor	Class Room	Lab Room
03Z	M	02:00 pm-04:50 pm	Mr. Rilling	CAV 215	CAV 216
04Z	T	11:00 am-01:50 pm	Dr. Carter	CAV 211	CAV 216
05Z	T	02:00 pm-04:50 pm	Dr. Carter	CAV 211	CAV 216
06Z	W	11:00 am-01:50 pm	Mr. Rilling	CAV 215	CAV 216
07Z	W	02:00 pm-04:50 pm	Mr. Rilling	CAV 215	CAV 216
08Z	R	11:00 am-01:50 pm	Mr. Rilling	CAV 215	CAV 216

Lab Course

The CHEM 1411 General Chemistry laboratory class accompanies this lecture class. The lab is designed to illustrate some of the principles involved in performing scientific measurements, handling chemicals, and performing chemistry experiments. In some cases, the experiments in the lab will introduce you to concepts *before* you cover them in the lecture course, and in some cases, the experiments will reinforce concepts already covered in the lecture course.

Labs will begin meeting on the first day of class. Bring your calculator!

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 Manual and Lab Reports

The lab manual provides 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. It is essential that you read the appropriate section in the lab manual before coming to class.

Cleaning Up After Lab

Make sure that your lab area is clean and that all glassware and hardware has been cleaned and returned to the appropriate drawers before leaving the lab.

Make-Up Lab Policy

The lowest lab score will be dropped from the total. If you miss a lab for a valid reason, that is the score that will be dropped.

Lab Safety Training

All students enrolled in lab courses are required to take a Mandatory Laboratory Safety Training and Quiz on Blackboard. Instructions for completing the quiz are given below:

1. Login to Blackboard, and choose the course: entitled “Lab Safety Training.”
2. Under the left hand menu, choose: “Get Started Here”.
3. There are three sections:
 - a. Welcome to Lab Safety Training — There are your instructions.
 - b. Lab safety training — Click on “Lab Safety — Click here to begin”. This will download a PowerPoint slide show which will cover the safety training.
 - c. The lab safety quiz. You must score 90% or higher. You can take it again in 24 hours.

The Lab Safety Training must be completed by the evening of Friday, January 25.

LECTURE AND LAB SCHEDULE — SPRING, 2019

	Week of	Lecture	Lab
1	1/14	Chapter 1: Matter and Energy — Composition of Matter, States of Matter, Measurements, SI Units, Significant Figures, Unit Conversions	Metric System, Precision, Accuracy, Sig Figs Measuring Mass and Volume (Blackboard)
2	1/21	<i>Monday, Jan 14 Martin Luther King Day</i> Chapter 2: Atoms, Ions, and Molecules — Nuclear Model, Atomic Mass, Periodic Table, Molecular and Ionic Compounds, Naming Compounds and Writing Formulas	Monday Holiday - NO Lab This Week Assignments (due on or before next lab – set by lab instructor): <ul style="list-style-type: none">• Required University Lab Safety Course• “Scientific Measurement & Presentation of Data”
3	1/28	Chapter 2, cont.	Unit Conversions / Dimensional Analysis Measuring Density (Blackboard)

	Week of	Lecture	Lab
4	2/04	Chapter 3: Stoichiometry — The Mole Concept, Balancing Equations, Stoichiometry, Percent Composition, Limiting Reactants	Hydrogen/Oxygen Gas Demo (Blackboard) (similar to Experiment 10 in Lab Manual)
5	2/11	Chapter 3, cont. Exam 1 – Thurs., Feb. 14 (Ch. 1, 2, 3)	Percentage of Potassium Chlorate in a Mixture (Blackboard)
6	2/18	Chapter 4: Solution Chemistry — Concentration, Electrolytes, Acid-Base Reactions, Precipitation Reactions, Redox Reactions	Experiment 12: Titration of Vinegar
7	2/25	Chapter 4, cont.	Experiment 5: Specific Heat Capacity
8	3/04	Chapter 5: Thermochemistry — Energy, Systems, Enthalpy, Heat Capacity, Calorimetry, Hess's Law, Standard Enthalpies of Formation	Experiment 7: Heats of Reaction: Hess's Law
	3/11	Spring Break	
9	3/18	Chapter 6: Properties of Gases — Pressure, The Gas Laws, the Ideal Gas Law, Gas Density, Dalton's Law, Kinetic-Molecular Theory Exam 2 – Thurs., Mar. 29 (Ch. 4, 5, 6)	Gas Law Lab (Blackboard)
10	3/25	Chapter 6, cont. <i>Thur., Mar. 28 Last Day to Drop</i>	No Lab This Week – Moon Lecture
11	4/01	Chapter 7: A Quantum Model of the Atom — Electromagnetic Radiation, Atomic Spectra, Photoelectric Effect, Bohr Model, Quantum Numbers, Atomic Orbitals, Electron Configurations of Atoms and Ions, Periodic Properties	Experiment 2: The Emission Spectra of Atoms
12	4/08	Chapter 8: Chemical Bonds — Lewis Structures, Covalent Bond, Polar Bonds, Resonance, Exceptions to the Octet Rule	Determination of Avogadro's Number (Blackboard)
13	4/15	Chapter 9: Molecular Geometry — VSEPR, Valence Bond Theory, MO Theory	Experiment 11: Percentage Water in a Hydrate
14	4/22	Chapter 9, cont. Exam 3 – Thurs., April 26 (Ch. 6, 7, 8)	Lewis Structures, VSEPR, Polarity (Blackboard) (similar to Experiment 6 in the Lab Manual)
15	4/29	Chapter 10: Intermolecular Forces — Intermolecular Forces, Vapor Pressure, Phase Diagrams, Water	Lab Final
16	5/06	Final Exams	

STUDENT LEARNING OUTCOMES

- **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.

¹ <http://books.wwnorton.com/books/index.aspx>

² www.angelo.edu/faculty/kboudrea

³ www.angelo.edu/dept/chemistry/

⁴ <http://uwm.edu/acs-exams/students/student-study-materials/>

⁵ http://www.angelo.edu/services/registrar_office/final.html

⁶ www.wwnorton.com/smartwork

⁷ <http://blackboard.angelo.edu> (or access Blackboard from RamPort)

⁸ www.angelo.edu/cstudent/