

Chemistry 1450
College Chemistry I
Fall 2017

Instructor: Dr. Faith Yarberry
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Office Hours: M 10:30-Noon, W 9-11

Course Information:

Lecture: Arkansas Hall 110 – TR 8:00-9:15

Text: *Chemistry A Molecular Approach* (4th Ed.) by Tro

Lab: Laney-Manion 206 R – 10:50-1:30 CRN: 14234

Laney-Manion 202 R - 2:40-5:20 CRN: 10259

Text: Labs to be printed from Blackboard

Course Item	# Given	# Dropped	# Toward Grade	Points per Item	Total Points
Lab	11	1	10	15	150
In-Class Quizzes	?	?	8	5	40
VSEPR Videos	5	0	5	10	50
Math Video/Quiz	8	0	8	10	80
ACS Exam	1	0	1	20	20
Pseudoscience Fair	1	0	1	70	70
Exams	4	1	3	130	390
Final Exam	1	0	1	200	200
Total					1000

Grades: A: 900 - 1000 points B: 800-890 C: 700-790 D: 600-690 F: < 600

The University of Central Arkansas adheres to the requirements of the Americans with Disabilities Act. If you need an accommodation under this Act due to a disability, please contact the UCA Office of Disability Services, 450-3613.

Course Description Principles of general chemistry with emphasis on their theoretical and quantitative aspects and applications.

Prerequisites It is recommended that students have taken and passed high school chemistry or have completed CHEM 1301 with a C or better. Prerequisite: ACT mathematics score of at least 21 or corequisite/prerequisite of MATH 1390.

Materials Required

Graphing Calculator
Goggles
Textbook
Printed Laboratories (On Blackboard)
Signed Safety Agreement
EdPuzzle Account
QR Code App for I-phone or Android Preferred

Course Objectives

Upon completion of this course, the student should have gained:

- The ability to use Scientific Notation and Significant Figures in Calculations.
- The ability to correctly name and give the formulas of simple ionic and covalent molecules.
- The confidence to perform Stoichiometric calculations involving molar mass, mole-to-mole ratios, Avogadro's number, and molarity.
- The ability to predict the products of precipitation and acid-base neutralization reactions and understand what is occurring in solution during the reaction.
- The knowledge necessary to work with redox reactions.
- An understanding of how to calculate the heat of and enthalpies of reaction and their meanings.
- An understanding of the structure of an atom of an element and its impact on the elements reactivity.
- The ability to draw simple molecules and predict their shape, hybridization, and polarity.

Attendance

Each class meeting is important to the course development. Class begins at 8:00 am and ends at 9:15 am. Roll will be taken. 4 unexcused absences may result in a W grade at the instructor's discretion. It is the responsibility of the student to obtain any information covered during their absence.

Attendance in the laboratory is mandatory. More than two absences **WILL** result in the student being dropped from the course with a W at the discretion of the instructor.

Homework

Students will be assigned video lectures to watch prior to each class. The instructor will do a short recap of the lecture in class.

In class problems will be found on Blackboard. You must print the problems before attending class.

VSEPR Video

Five VSEPR Videos will be assigned as part of Chapters 9 and 10, as well as part of the VSEPR Lab. Each video will constitute 10 points. The grade will be determined according to whether you watch the video and how you perform on the questions associated with the video. The required videos **WILL** be announced in the class prior to its due date.

In-class Quiz

Quizzes will be administered periodically throughout the semester at the start of a class prior to announcements. Students will be given 5 minutes to complete the quiz. The quiz will cover material discussed in the previous lecture or the concept presented in the video assignment.

Math Quiz Chemical concepts containing math will be the focus of a mathematical tutorial available through Blackboard and EdPuzzle. The tutorial will consist of a pre-quiz (on Blackboard), a video explanation of the mathematical concept (on EdPuzzle), and a post-quiz (on Blackboard). All three components will be worth 10 points each. The resultant grade will be incorporated in your overall grade. The required mathematical tutorial WILL be announced in the class prior to its due date.

ACS Exam The American Chemical Society College Chemistry I exam will be administered during the last lab meeting of the semester. The result of the exam WILL constitute up to 20 points of your course grade. If you score a C or better on the ACS exam, the instructor will determine what your course grade would be if the ACS exam counted for itself and the Final Exam grade. If the student is satisfied with this grade, they can email the instructor asking that the ACS exam be used as the Final exam thereby eliminating the need for the student to take the official Final exam.

Exams 4-75 min exams will be administered on the dates listed in the syllabus beginning at 8:00 am. The final exam will be held December 14th from 8:00-10:00 am. Plan your schedule accordingly because make-up exams will NOT be offered. Missed exams will be dropped up to the allotted number. The Final Exam WILL ONLY be offered according to the universities Final Exam Schedule.

Laboratory Grade - Laboratory experiments will constitute 150 points of your grade. Each lab will be graded out of 15 points. (Lab Lectures count as a single lab grade of 15 points)

Laboratory Grade	Points	When Due
EdPuzzle and In-Lab Quiz	4	Students will be required to watch the EdPuzzle Videos prior to entering the laboratory. The associated questions will constitute 2 points of the quiz grade. A pre-lab quiz worth 2 points will be given at the start of lab. The quiz will cover the background and procedure found in the laboratory videos.
Data / Results	3	At the end of lab (one per group)
Post-Laboratory	4	At the end of lab (one per group)
Participation and Safety	4	Throughout lab the First safety violation receives a warning, the second safety violation you will lose 2 points. A third violation and you will be told to leave the lab. Each student is expected to participate in a lab role. Failure to do so will constitute a loss of up to 2 points as determined by the instructor and TA.
Total	15	

Laboratory Role

Chemistry is an experimental science. Lab time is your chance to master some of the experimental aspects of the subject. You will work in groups in the lab, but you will still be expected to actively participate in the experiments. Passive observation in lab while your partners do the work is unacceptable and will cost you up to 2 points. The TA and your instructor will determine participation points.

Each group will consist of three roles. These roles will be assigned at the start of each lab. The roles are:

Leader – Keeps the group on track, understands the background.

Lab Tech – Knows the procedure in advance, leads the group through the procedure.

Scribe and Mathematician – Records all information on the data/results and post laboratory sheets. Makes sure all recorded values are to the correct number of significant figures.

Your participation will be graded on the efficiency by which you carried out your role, whether you participated in completing the experiment and whether you helped in the completion of the calculations on the data/results sheet.

Data/Results

Your data must be recorded to the **correct number of significant digits**. Your results will be graded for correctness in calculations, the correct number of significant digits, and for accuracy.

Post Lab

Your post-laboratory will be graded for thoughtful answers based on your data/results and for correctness. The groups' data/results sheet and post-lab will be stapled in order of occurrence and left at the group laboratory station.

Safety

Safety is Mandatory. You will not be allowed to enter the lab without closed toe shoes and goggles. You will be warned upon your first safety violation. A second violation will result in the loss of 2 points. The third violation will result in you being required to leave the lab for that day and receiving a zero for that lab.

Safety Agreement

Before being permitted into the first lab, you must complete the safety agreement at uca.edu/web/forms/view.php?id=353

Pseudoscience Fair This course contains a Service-Learning component. The Service-Learning component will be a group project. The Service-Learning Project will involve participation in a Pseudoscience Fair put on by the STEM Residential College at Arkansas Hall on the UCA campus. Completion of the project will constitute 70 points of your grade.

Objectives Students will: (1) learn to work in teams, (2) think critically about scientific information, and (3) learn to communicate scientific concepts to a broad audience.

Process The group will:

- Consist of group members assigned by the instructor.
- Decide on a product to research
- Meet with the instructor on one occasion.
- Develop a PowerPoint or poster (obtain poster template from instructor)
- Present their findings at the Pseudoscience Fair.
- Evaluate their participation and the participation of the other members of their group.

Pseudoscience Fair Grade:

Email with Group Member Names, Topic, and Format	5
Meeting with Instructor	10
Quality Communication at Pseudoscience Fair	15
Presentation	15
Self-Evaluation	15
Member Evaluation (Participation)	10
Total	70

Description of Pseudoscience Fair Grade

The group will:

- Submit an email to the instructor with the group members names, topic, and the format for their presentation (poster or powerpoint)
- Meeting with Instructor
You will be evaluated on your interaction with the instructor, and the quality of your presentation (you will be expected to have made significant strides in developing the presentation and if presenting a poster, you will be expected to have it complete by **October 5th**)
- Quality Communication at Pseudoscience Fair
5 pts - attends
10 points - articulating the science in a manner where attendees understand
- Presentation
5 pts – well written and visually appealing
10 pts – comprehensive
- Self-Evaluation
5 pts – completion
10 potints – thoughtful completion
- Member Evaluation
0 points if your group member and instructor determines that you did not participate
2-10 points depending on your degree of activity within the group as indicated by the other members’ evaluation and the instructor’s evaluation.

Pseudoscience Fair Calendar:

Date	Location	Time
9/5	Email Due	Noon
9/5-9/16	Must have First Meeting with Instructor	TBD
10/5	Posters must be turned in for printing	Noon
10/12	Pseudoscience Fair – Student Center Ballroom	Noon – 3:00 pm Set-up starting at 11:30 am
10/31	Member Evaluation Due	8:00 am
10/31	Self-Evaluation Due	8:00 am

General Information:

Office Hours

This time is specifically set aside for you to ask me questions and receive help on course material. Use this time! **If you cannot make the scheduled times, make other arrangements with me.**

Academic Integrity

The University of Central Arkansas affirms its commitment to academic integrity and expects all members of the university community to accept shared responsibility for maintaining academic integrity. Students in this course are subject to the provisions of the university's Academic Integrity Policy, approved by the Board of Trustees as Board Policy No. 709 on February 10, 2010, and published in the Student Handbook. Penalties for academic misconduct in this course may include a failing grade on an assignment, a failing grade in the course, or any other course-related sanction the instructor determines to be appropriate. Continued enrollment in this course affirms a student's acceptance of this university policy.

The penalty for academic dishonesty on an exam in this course is that the student will receive a zero for that exam and the exam grade will be counted into their final average. Plagiarism on any paper and the student will receive a zero for that grade.

Emergency Procedures Summary

An Emergency Procedures Summary (EPS) for the building in which this class is held will be discussed during the first week of this course. EPS documents for most buildings on campus are available at <http://uca.edu/mysafety/bep/>. Every student should be familiar with emergency procedures for any campus building in which he/she spends time for classes or other purposes.

Title IX Disclosure

If a student discloses an act of sexual harassment, discrimination, assault, or other sexual misconduct to a faculty member (as it relates to “student-on-student” or “employee-on-student”), the faculty member cannot maintain complete confidentiality and is required to report the act and may be required to reveal the names of the parties involved. Any allegations made by a student may or may not trigger an investigation. Each situation differs and the obligation to conduct an investigation will depend on those specific set of circumstances. The determination to conduct an investigation will be made by the Title IX Coordinator. For further information, please visit: <https://uca.edu/titleix>. **Disclosure of sexual misconduct by a third party who is not a student and/or employee is also required if the misconduct occurs when the third party is a participant in a university-sponsored program, event, or activity.*

Other Policies

Information concerning University Academic Policies (such as the Sexual Harassment Policy and Academic Policies) can be found in the Student Handbook. Students should familiarize themselves with all policies listed in the Student Handbook at <http://uca.edu/ubulletin2015/general-policies-information> .

Schedule

Test and Lab Dates are Set

Date	In Class Discussion	Assigned Videos to Watch Before Next Class	Practice Problem to Print Before Next Class
Aug 24	Syllabus, Periodic Table Introduction	Matter and Changes Measurements Significant Figures	Matter and Changes Measurements Significant Figures
24	No Lab		
29	Chapter 1	Units of Measurements Scientific Notation and Calculator Energy, Heat, and Temperature Conversions	Calculations and Conversions
31	Chapter 1	History Behind the Atomic Structure Protons, Neutrons, Electrons – Neutral Atoms	Law of Mass Conservation Proton, Neutrons, Electrons – Neutral Atoms
31	Measurements Lab		
Sept 5	Chapter 2	Proton, Neutrons, Electrons – Ions Average Atomic Mass	Protons, Neutrons, Electrons – Ions Average Atomic Mass
7	Chapter 2	Ions	
7	Separations Lab		
12	Chapter 3	Formulas of Ionic Compounds Naming Ionic Compounds Ionic Hydrates	Ionic Blocks Exercise Ionic Compound Practice
14	Chapter 3	Covalent Molecules Acids Formula Mass, Molar Mass, % Composition	Covalent Molecules Formulas Mass, Molar Mass, % Composition
14	Density Lab		
19	Chapter 3		
20	<i>Study Session</i>		<i>6:00-8:00 STEM RC Classroom</i>
21	Exam 1	Balancing Chemical Equations Reaction Calculations Solution Calculations	Balancing Chemical Equations Reactions Calculations Solution Calculations
21	Hydrate Lab		
26	Chapter 3&4	Electrolyte Reaction Equation Types Precipitation Reactions	Electrolytes Precipitation Reactions
28	Chapter 4	Acid Base Neutralization Titrations	Acid Base Neutralization
28	Lab Lecture		
Oct 3	Chapter 4	Redox Reactions Gas Evolving Reactions Gas Law	Redox Reactions
5	Chapter 4	Energy	Energy
5	Reactions Lab		

10	Chapter 5&6		
10	<i>Study Session</i>		6:00-8:00 STEM RC Classroom
12	Exam 2	Heat Capacity Video Heat Capacity Math Video Heat Exchange Math Video Work, Energy and Calorimetry Enthalpy	Specific Heat Calorimetry
12	Pseudoscience Fair		
17	Chapter 6	Hess's Law Enthalpies of Formation	Hess's Law Enthalpies of Formation
19	<i>Fall Break</i>		
19	No Lab		
24	Chapter 6	History Behind the Atomic Structure Energy Math Video Atomic Spectra Rydberg –Balmer Equation Rydber-Balmer Math Video	Energy and Rydberg Balmer Calculations
26	Chapter 7	Quantum Mechanics	Quantum Numbers Introduction
26	Acid/Base Titration Lab		
31	Chapter 7	Electron Configurations	Electron Configurations and Quantum Numbers
Nov 2	Chapter 8	Electron Configuration of Ions Atomic and Ion Trends	Electron Configuration of Ions Atomic Trends
2	Gas Law Lab		
Nov 7	Chapter 8		
8	<i>Study Session</i>		6:00-8:00 STEM RC Classroom
9	Exam 3	Introduction to Lewis Structures	Introduction to Lewis Structures
9	Thermochemistry Lab		
10	<i>W Deadline</i>		
14	Chapter 9	Lewis Structures of Ionic Compound	Lewis Structures of Ionic Compounds
16	Chapter 9	Lewis Structures of Covalent Molecules	Lewis Structures of Covalent Molecules
16	Spectroscopy Lab		
21	Chapter 9&10		
23	<i>No Class -Thanksgiving Break</i>		
23	<i>No Lab – Thanksgiving Break</i>		
28	Chapter 10	Bond Polarity VSEPR PowerPoint Video VSEPR Video	Bond Polarity and Strength Chapter 10 Optional Homework
29	<i>Study Session</i>		6:00-8:00 STEM RC Classroom
30	Exam 4		
30	VSEPR Lab		

Dec 5	Chapter 10	VB Theory	
7	Review for Final		
7	ACS Exam		
8	<i>Study Day</i>		
14	Final Exam (8:00-10:00 am)		

Technology Instructions

Laboratory Safety Agreement – required for admittance to first lab

Go to <https://uca.edu/web/forms/view.php?id=353>

Complete the Form

Blackboard – contains PowerPoints, Optional Homework, Syllabus, Evaluation forms, etc.

Log into your MyUCA account

Click on the My Courses tab

Click on College Chemistry I

EdPuzzle

<http://www.EdPuzzle.com>

Click on I'm a new Student and Complete the Form

User Name (make sure you remember it as I will not have access to this information)

Password ((make sure you remember it as I will not have access to this information))

Click Sign Up

Click Join Class

Type: cubomad

Search

Join

Pseudoscience Fair Evaluations

Individual Evaluation - <https://uca.edu/web/forms/view.php?id=957>

Group Evaluation - <https://uca.edu/web/forms/view.php?id=956>

Opportunities for Bonus Points (You can earn up to 30 point maximum.)

Opportunity	Attendance	Evaluation
Chalk Talk	5	
Chalk Talk	5	
Chalk Talk	5	
Seminar (Each seminar indicated by instructor)	5	
MapWorks Completed (show print-out or screen shot of completion screen) – Sept 21, 8:00 am	5	
Map-Works Evaluation - Sept 21, 8:00 am (Found under Course Bonus folder in Blackboard)		10
Science Night (Each event)	10	

Attendance Points – Sign in with Dr. Yarberry and participate in order be considered as attending

MapWorks Evaluation – Complete the form available on Blackboard

Lab	
Measurements	_____/15
Density	_____/15
Separations	_____/15
Hydrate	_____/15
Lecture	_____/15
Reactions	_____/15
Acid/Base	_____/15
Gas Law	_____/15
Thermochemistry	_____/15
Spectroscopy	_____/15
VSEPR	_____/15

Pseudoscience Fair	
Email	_____/5
Meeting	_____/10
Communication	_____/15
Presentation	_____/15
Self Eval	_____/15
Member Eval	_____/10

In-Class Quiz	
Quiz 1	_____/5
Quiz 2	_____/5
Quiz 3	_____/5
Quiz 4	_____/5
Quiz 5	_____/5
Quiz 6	_____/5
Quiz 7	_____/5
Quiz 8	_____/5
Quiz 9	_____/5
Quiz 10	_____/5
Quiz 11	_____/5
Quiz 12	_____/5
Quiz 13	_____/5
Quiz 14	_____/5
Quiz 15	_____/5

Exams	
Exam 1	_____/130
Exam 2	_____/130
Exam 3	_____/130
Exam 4	_____/130

Math Quiz	
Math Tutorial 1	_____/10
Math Tutorial 2	_____/10
Math Tutorial 3	_____/10
Math Tutorial 4	_____/10
Math Tutorial 5	_____/10
Math Tutorial 6	_____/10
Math Tutorial 7	_____/10
Math Tutorial 8	_____/10

VSEPR Videos	
Ionic	_____/10
Linear, etc	_____/10
Tetrahedral, etc.	_____/10
Trig Bipy, etc	_____/10
Octahedral, etc	_____/10

ACS Exam	
Exam	_____/20

Bonus	

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Pseudoscience Fair	1	0	1	70	70
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Total					1000

To determine what you need to make on your final exam:

- A. Sum of Top 10 Lab Grades _____
- B. Sum of Top 3 Exam Grades _____
- C. Sum of Pseudoscience Fair Grade _____
- D. Sum of Math Quiz Grades _____
- E. Sum of Top 8 In-Class Quiz Grades _____
- F. Sum of VSEPR Grades _____
- G. ACS Exam Grade _____
- H. Bonus (up to 30 points) _____
- I. Total Sum A – H above** _____

For an A on your transcript, the following equation indicates the number of points you need on your final exam.

$$900 - I = \underline{\hspace{2cm}}$$

For a B on your transcript, the following equation indicates the number of points you need on your final exam.

$$800 - I = \underline{\hspace{2cm}}$$

For a C on your transcript, the following equation indicates the number of points you need on your final exam.

$$700 - I = \underline{\hspace{2cm}}$$

For a D on your transcript, the following equation indicates the number of points you need on your final exam.

$$600 - I = \underline{\hspace{2cm}}$$