

CHEM 1451 (CRN 23365)
College Chemistry II
Spring 2020

Lecture: TR 10:50 am – 12:05 pm (Laney-Manion 101)

Lab Session: R 2:40 pm – 5:20 pm (Laney-Manion 204)

Instructor: Dr. Marsha D. Massey

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Phone: (501) 450-5961

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Need to meet with me?: Set up a meeting using my Google Calendar! (see Blackboard for link)

Email to schedule if Google Calendar available times conflict with work/class

<https://tinyurl.com/MeetingMasseySpring2020>

Materials Required:

- *Mastering Chemistry* for below book (will include e-text)*
- “Chemistry: A Molecular Approach” by Tro, **4th ed.** (0-13-411283-0)
 - e-text only is fine, but you may prefer to also get a hard copy
 - hard copy in the library and during Dr. Massey’s office hours can also be used
- Blackboard, abbreviated “**BB**” (for assignments, lab manuals etc)*
- Internet-capable device: laptop, cellphone, or tablet (for above tools during class)*
- Calculator
- ANSI Z87-approved safety glasses or goggles for lab

*The university and its affiliates are not responsible for any damage to your technology (ex: laptops, tablets, cellphones) used in lab or class.

Course Description	This course will expand upon core principles of general chemistry learned in College Chemistry I with an emphasis on quantitative aspects and applications. The course will include lecture, collaborative work, and laboratory activities. This is a required course for chemistry, biology, and chemical physics majors, and for medical pre-professional tracks.
Prerequisite	College Chemistry I (CHEM 1450) must be completed prior to taking this course with a grade of C or better. Equivalent course credit may be accepted if approved by the university and UCA department of chemistry. It is strongly recommended that students have a solid foundation from CHEM 1450. See blackboard for a list of topics you must have <i>mastered</i> prior to this course.
Course Objectives	Students in this course will be able to apply general chemistry concepts to real-world problems and scenarios. Furthermore, students will practice communicating chemistry concepts to a variety of audiences both written and verbally. Students will become proficient in techniques and methodologies essential to chemistry and related fields of study.
Meetings w/ Dr. Massey	Take advantage of meeting with me early in the course. Come to see me the moment you are concerned about understanding course material. This time is most effective if you come prepared with specific questions.

Overall Course Grade:

Assignment	Total Assigned	Number Counted	Percent
General Chemistry Review Quiz	1	all	4
<i>Mastering Chemistry</i> Class Preparations	19	18	3
Weekly Review Problems	8	all	8
Problem Sets	4	all	10
Labs	11	10	15
Exams	4	3	40
Final Exam	1	all	20
Total			100

A: 100 – 90% **B:** 89 – 80% **C:** 79 – 69% **D:** 68 – 58% **F:** <58%

Course Policies:

Late assignments will receive 50% credit of the assigned grade, if turned in no later than two (2) days late (except CPs & WRPs). Assignments turned in later than two days (48 hours) after deadline can be submitted for evaluation but will receive a grade of zero (0).

Assignment extensions *may* be granted in the case of unavoidable circumstances (medical or family emergencies). If so, and you do not adhere to the new deadline zero points will be given for the assignment.

Regrade Policy: You have one (1) week after assignments are returned to the class to request grade adjustments.

Attendance for this course is mandatory and monitored by use of *Learning Catalytics* (see pg 4. Class Participation). You are permitted three (3) absences. In the case of illness, please have your medical provider send a note the day you return to class.

Classroom Etiquette: You are expected to be *engaged* and respectful of everyone's time in lab and class. Electronics can only be used for taking class notes or working problems. Checking email, reviewing social media, browsing the web, and any other non-class related activity is **unacceptable**. See class participation on pg. 4 for more details.

Note that ONLY calculators can be used for exams and/or quizzes. Cellphones, tablets, laptops and other electronics cannot be used in place of calculators. Calculators cannot be shared between students. No internet-capable device can be used for exams.

E-mail Policy: I will reply to your email promptly as possible. Please keep in mind like yourselves I have a schedule full of classes, meetings, and additional life matters to address daily. Thus, please allow for **24 hours** after your e-mail has been sent for me to send a reply. Holidays and weekends I may require more time, but I will endeavor to reply that your message has been received. I will only reply to UCA email addresses.

Academic Accommodations: 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 Disability Resource Center, 501-450-3613.

Assignment Details:

<p><i>Mastering Chemistry</i></p> <p>Class Preparations (CPs) aka Mastering #</p>	<p>Before each lecture session you will be required to complete questions in <i>Mastering Chemistry</i> to prepare you for class. These problems do not replace the benefits of reading the textbook. To receive full credit these assignments must be completed at least 10 minutes before the start of class.</p> <p>To perform well you need to complete <i>Dynamic Study Modules</i> FIRST.</p> <p>You will have a total of 19 “<i>Mastering</i>” CPs assigned during the semester. You can complete these at any time before the deadline.</p> <p>You must complete these individually as described below for Problem Sets.</p> <p>You are encouraged to use your textbook or resources on this course’s Blackboard and Mastering site. No other resources may be used.</p>
Problem Sets	<p>These assignments will be designed to aid you in integrating content across chapters and applying problem solving skills to interdisciplinary material.</p> <p>You must complete these assignments independently.</p> <p>Collaboration with classmates, tutors, or anyone other than the instructor is a violation of the Honor Code and against the academic integrity statement. You can only use the resources mentioned above for CP assignments.</p> <p>This assignment will prepare you well for exams if conducted properly.</p> <p>You will have four (4) total problem sets designed by Dr. Massey.</p>
Weekly Review Problems (WRP)	<p>To aid in long term comprehension of topics you must complete WRPs at the end of most weeks in Blackboard (BB).</p> <p>These problem solving questions must be completed online via Blackboard. You are strongly encouraged to keep a notebook where you work these problems regularly by hand. This will be excellent practice to prepare for exams as these are timed assignments. You will have 10 - 20 minutes to complete the assignment once started, plus 5 minutes to upload written work. (See Course Reading Guide for most time effective method.)</p> <p>You must do these independently, following the same guidelines above for CP and Problem Sets. For best results, you will need to be prepared to work these without using the course textbook or other outside sources.</p> <p>You will have 8 WRP assignments to complete during the semester.</p>
Exams	<p>There will be four (4) exams throughout the semester as outlined in the tentative course calendar. I will not offer make-up exams.</p> <p>You will have an opportunity to drop a single (1) exam grade.</p>
Final Exam	<p>The final exam is on Thursday April 30th from 11:00 am – 1:00 pm in our normal classroom location.</p>

Other Helpful Resources:

Homework	Recommended problems at the end of each chapter will be shared on Blackboard in a PDF document. You will not have graded homework. However, it is not likely you will pass the course without mastering these. You need to do homework problems daily to be successful.
Dynamic Study Models (DSMs)	<p>These assignments will not be graded; <i>HOWEVER</i> successful students will utilize them effectively. I will only assign DSMs which will help you to master course material.</p> <p>Many students find this is an effective way to practice and study on-the-go since it can be used on your smart phone or tablet. Download the Mastering Chemistry app to get started.</p> <p>This is a great resource to:</p> <ul style="list-style-type: none"> • prime yourself for reading the textbook material • prepare for Mastering CP assignments • review before doing recommended homework in the book • review basics before WRPs and Exams

Laboratory Grade:

There will be 11 **required** laboratories. You **cannot miss more than two labs**, otherwise you will be dropped from the course with a course grade of **F**. There will be **no make-up labs**. Your laboratory grades (each lab day/session) will be determined as follows:

Pre-lab (40 %): you must bring your printed lab manual/instructions from Blackboard. Any assigned work must be submitted once you enter and before lab starts in the designated folder by the door.

Post-lab and Data (50 %): you must turn in your work no later than one (1) week following the start of the lab session as a hard copy. So your post-lab is due at the start of the next lab session unless instructed otherwise.

Participation (\approx 10%): you must come to lab in proper attire. You must be wearing your lab goggles and proper attire (pants and close-toed shoes) **before entering** to avoid losing lab points that day. This grade also includes lab cleanliness and friendliness. Your lab grade for that day can **decrease** according to the following:

If forget goggles or dressed improperly: -5% each item

If no lab manual & post-lab printed: -5%

If do not clean-up before leaving: -5%

If eating, drinking, or removing goggles during lab, etc: see below on safety

Lab safety is essential. Thus, you only get one (1) warning to follow safety guidelines. After the second warning, you will lose 5%. A third warning you lose 5%. A fourth warning you will be dismissed from lab with a grade of zero for that lab day. Warnings can come from your TA(s) or visiting instructors also.

Must complete **laboratory safety agreement online before R Jan 9rd at 2:30 pm:

<https://www.uca.edu/web/forms/view.php?id=1487>

Class Participation Impact on Grade:

You must use *Learning Catalytics* via Pearson© *Mastering Chemistry* in class when requested. Questions will occur daily in class to track attendance. You **must attend class** to receive credit. **Not participating in class may result in a lower course grade.**

Extra Credit:

There will be at least two extra credit options:

1. You can do two (2) surveys for ½% each.
2. You can submit two (2) multiple choice review questions. Each question can earn up to 1%.
 - You must complete the instructions on Blackboard for how to design a final exam multiple choice review question for credit.
 - Submissions which do not follow the guidelines on Blackboard will not receive credit.

A maximum boost of 2% to your final course grade is possible using these opportunities.

Course Schedule:**
(lab and exam dates will *not* change)

Wk	Dates	Topics	Reading [†]	Pre-Class Assignments	Post-Class Assignments
0	⁰ R – Jan 9	Introductions intermolecular forces surface tension, viscosity	Syllabus 487 – 502, 502 – 508	Mastering Chemistry Intro Mastering 0 (<i>recommended</i>) <i>DSM – Electroneg. & Polarity</i>	<i>DSM – Intermolecular Forces</i> WRP 1 due Sun 10 pm Lab Safety due
		<i>Lab 1 - CHEM 1450 Review</i> <i>Graphing Assignment</i>	BB & Mastering	Pre-lab is written BB Primer & Mastering “Lab 1...Essnt”	Post-lab is Graphing Assignment
1	¹ T – Jan 14	colligative properties intro heating curves	512 – 517 520 – 521	Mastering 1	
	<i>W – Jan 15</i>	<i>last day to drop (100% refund) and last day to add classes</i>			
	² R – Jan 16	Gen. Chem Review Quiz phase change diagrams solid & gas solubility solutions and mixtures	517 – 520 577 – 585	Mastering 2	WRP 2 due Sun 10 pm
		<i>Lab 2 - Sugar Density</i>	BB	Pre-lab (Post-lab Lab 1 due)	Post-lab
2	M – Jan 20	MLK Holiday No Classes			
	³ T – Jan 21	solubility vs saturation solution enthalpy concentration units	577 – 585 585 – 592	<i>DSM – Concentration</i> Mastering 3	<i>DSM – Application of Conc.</i>
	⁴ R – Jan 23	colligative properties Raoult’s Law boiling point elevation freezing point depression	593 – 603, 605 – 607	Mastering 4 Problem Set 1 due	<i>DSM – Advanced Prop Solns</i> WRP 3 due Sun 10 pm
		[[No lab]]		--	

3	⁵ T – Jan 28	EXAM 1 (ch. 11 & 13)	<i>study</i>		
	⁶ R – Jan 30	reaction rates average & instantaneous rates finding rate law experimentally	624 – 633	Mastering 5	<i>last day drop (75% refund)</i> <i>DSM – Rate of Rxn, Rate Law</i>
		Lecture (RM 105): integrated rate laws, half-life rate laws from graph data basic reaction mechanisms	634 – 641 648 – 653	Mastering 6 (Post-lab Lab 2 due)	<i>DSM – Integrated Rate Laws ...</i>
4	⁷ T – Feb 4	<i>Review</i>	DSMs		
	⁸ R – Feb 6	equilibrium constant reaction quotient calc. equilibrium concentration	675 – 688, 691 – 702	Mastering 7	<i>DSM – Equilibrium</i> WRP 4 due Sun 10 pm
		<i>Lab 3 - Kinetics</i>	BB	Pre-lab	Post-lab
5	⁹ T – Feb 11	calc. equilibrium concentration Le Chatalier's principle	693 – 710	Mastering 8	<i>DSM – Advanced Equilibrium</i>
	¹⁰ R – Feb 13	<i>Review</i>	DSMs	Problem Set 2 due	WRP 5 due Sun 10 pm
		<i>Lab 4 - Le Chatalier's Principle</i>	BB	Pre-lab	Post-lab
6	¹¹ T – Feb 18	EXAM 2 (ch. 11 – 14)	<i>study</i>		
	¹² R – Feb 20	acid-base theories conjugate acid-base pairs acid base strength (K_a & K_b)	723 – 736, 757 – 758 764 – 765	Mastering 9 <i>DSM – Properties of Solutions</i>	<i>DSM – Advanced Acids and Bases</i>
		Exam 2 Review	Bring your Exam 2	First 10 min of lab is general review for all (required) If Exam 2 is below 70%, you must stay entire lab time.	
7	¹³ T – Feb 25	pH calculation strong acid/base pH calculation weak acid/base acid-base properties of salts	737 – 757	Mastering 10 <i>DSM – Acids and Bases</i>	<i>DSM – Acid and Base Equilibria</i>
	¹⁴ R – Feb 27	buffers <i>assign buffers for Lab 6</i> strong acid-base titration curve	758 – 759 780 – 781, 783 – 799	Mastering 11	<i>DSM – Buffers</i> WRP 6 due Sun 10 pm
		<i>Lab 5 - Equilibrium Constant</i>	BB	Pre-lab	Post-lab

8	¹⁵ T – Mar 3	strong-weak titration curves titration problems	800 – 806	Mastering 12	<i>DSM – Acid-Base Titrations</i>
	¹⁶ R – Mar 5	solubility equilibria (K_{sp}) common ion effect	782 – 783, 809 – 818	Mastering 13	<i>DSM – Solubility Product...K_{ss}...</i> WRP 7 due Sun 10 pm
		<i>Lab 6 - Buffer Synthesis</i>	BB	Pre-lab	Post-lab
9	¹⁷ T – Mar 10	<i>Review</i>	DSMs	Problem Set 3 due	
	¹⁸ R – Mar 12	EXAM 3 (ch. 11 – 16)	<i>study</i>		
		<i>Lab 7- Weak Acid Titration KHT</i>	BB	Pre-lab	Post-lab
10	¹⁹ T – Mar 17	spontaneity, entropy, enthalpy <i>assign solutions for K_{sp} Lab 8</i>	839 – 855, 859 – 863	Mastering 14 <i>DSM – Enthalpy</i>	
	²⁰ R – Mar 19	<i>Review</i>	DSMs	Mastering 15	
		<i>Lab 8 - K_{sp} KHT</i>	BB	Pre-lab	Post-lab
11	<i>M – F: Mar 23 – 27</i>	Spring Break	[No Classes]		
12	M – Mar 30	<i>final date to withdraw (W) from classes, after this must receive grade A, B, C, D, or F</i>			
	²¹ T – Mar 31	free energy free energy and equilibrium	855 – 859, 863 – 876	Mastering 16	<i>DSM – Entropy...Free Energy</i>
	²² R – Apr 2	<i>Review</i> balancing redox reactions	<i>(175 – 180)</i> 890 – 893	<i>DSM – Redox Reactions</i>	WRP 8 due Sun 10 pm
		<i>Lab 9 - Thermodynamics KNO_3</i>	BB	Pre-lab	Post-lab
13	²³ T – Apr 7	galvanic cells standard reduction potentials	893 – 905	Mastering 17	<i>DSM – Balancing Redox Rxns</i>
	²⁴ R – Apr 9	E_{cell} , free energy, equilibrium	905 – 913	Mastering 18	
		<i>Lab 10 - Balancing Redox</i> then Lab Lecture: electrolysis	BB 918 - 923	Pre-lab <i>DSM – Thermodynamics... K</i>	Post-lab
14	²⁵ T – Apr 14	<i>Review</i>	<i>study</i>	Problem Set 4 due	
	²⁶ R – Apr 16	EXAM 4 (ch. 11 – 18)	--		
		<i>Lab 11 - Electrochemistry</i>	BB	Pre-lab	Post-lab
15	²⁷ T – Apr 21	<i>Review</i>		Mastering 19	
	²⁸ R – Apr 23	<i>Last Day of Class</i>			
		Final Review	--		Extra Credit due Sun 10 pm

<i>fin</i>	R – Apr 30	Final Exam 11:00 am – 1:00 pm			
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**The instructor reserves the right to change the schedule at any time, with exception of lab and exam dates (unless the university closes).

† Reading is **minimum** required for student having taken chemistry before and with a strong foundation from Chemistry 1.

Therefore, the reading listed may not be adequate for all students to pass this course.

All reading should be done before attending that day's class session. Page numbers are for Tro 4th edition.

Notes:

- General Chemistry Review Quiz on Thursday Jan 16th will be a maximum of 15 minutes at the end of class
- Mastering pre-class assignments are due by 10:40 am the day they are listed and most are found on *Mastering Chemistry* site
- WRP post-class assignments due by 10:00 pm the Sunday after which they are listed here. Find them on **Blackboard**
- Lab titles in italics are actual lab modules (11 total): meaning you have a pre-lab **and** post-lab assignment to turn-in for each.
- DSM assignments (in *Mastering Chemistry*) are optional (not graded) but can greatly help to prepare for CPs & WRPs.
 - *Select Math & CHEM I review assignments show at the bottom due on "05/04/20 at 6:37 pm"*
 - You must already be comfortable and confident in the content in those assignment
 - Email Dr. Massey to request more of these for particular topics
- Adaptive Follow-Up assignments may be programmed but they are not required or for a grade. They may help though!

See Blackboard for additional syllabus items under Course Documents link.

Blackboard – contains class slides, handouts, homework problems, announcements, syllabus, evaluation forms, etc.

You will also complete and submit your WRPs and extra credit assignment here.

Log into your MyUCA account

Click on the "Essentials" tab at the top, then select "Current Students"

Click on the "Blackboard" box, at the top select "Courses"

Click on "COLLEGE CHEMISTRY II"

Emergency Procedures Summary:

Every student should be familiar with emergency procedures for any campus building in which he/she spends time for classes or other purposes. An Emergency Procedures Summary (EPS) documents for most buildings on campus are available at

<http://uca.edu/mysafety/bep/>.