# CHEM 1451 (CRN 32991, 32992, 32993)
# College Chemistry II
## Spring 2021

**Lecture**: TR 8:00 – 9:15 am (online **synchronous**)

| **CRN:** | **32991** | **32992** | **32993** |
|---|---|---|---|
| **Lab** *in Manion 206* | Wed 11:00 a – 1:50 p | Wed 2:00 – 4:50 p | Thurs 2:40 – 5:20 p |
| **CSI Recitation** *Online in BBCU* | Mon 4:00 – 4:50 pm | Wed 5:00 – 5:50 pm | Tues 4:05 – 4:55 pm |

**Instructor**: Dr. Marsha D. Massey **Phone**: (501) 450-5961
**Office**: Manion 203D **Email**: marsham@uca.edu

**Need to meet with me? Live Virtual Q&A** on Fridays at 10:30 – 11:30 am in BBCU
***OR*** Sign-up using Google Calendar link below for other times:
https://tinyurl.com/MeetingMasseySpring2021

**Materials Required:**

- Textbook: "Chemistry: Structure & Properties" by Tro, **2nd ed**.
- Blackboard (for lecture sessions, videos, exams, quizzes, lab manuals, etc)*
- CHEM101 account using course code: **F5G37H** ( www.chem101.co )*
- Internet-capable device: laptop, cellphone, or tablet (for above tools during class)*
- calculator (not on cellphone or computer)

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

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| 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 ***mastered*** 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. |
| Meeting with 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. See options listed above for meeting with Dr. Massey during the course |

## Overall Course Grade:

| Assignment | Total Assigned | Number Counted | Percent |
|---|---|---|---|
| Co-Curricular Activity | 1 | all | 2 |
| Pre-Class CHEM101 | 21 | 10 | 3 |
| Homework CHEM101 | 10 | 8 | 5 |
| Labs | 8 | 7 | 20 |
| Quizzes | 10 | 9 | 10 |
| Exams | 4 | all | 40 |
| Final Exam | 1 | all | 20 |
| ***Total*** | | | ***100*** |

**A**: 100 – 90%  **B**: 89 – 80%  **C**: 79 – 70%  **D**: 69 – 60%  **F**: <60%

## Course Policies:

**Late assignments**: **Only** Post-Lab assignments and the Co-Curricular assignment can be submitted late ***if*** you email in advance of the deadline to request more time. You must request an extension 24 hours in advance of the deadline. Plan accordingly and *manage yourself (your actions)*, because time is limited and cannot be managed, use it wisely.

Late assignments are will only receive consideration if requested by email to Dr. Massey prior to the deadline. You are not guaranteed to earn credit for late work.
If your request for an extension is granted, you can receive 50% credit of the assigned grade, if turned in no later than one (1) day late of the original deadline.

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 your work to be regraded. Note: the entire assignment will be re-evaluated.

**Attendance** for this course is mandatory. Attendance will be taken daily in Blackboard Collaborate Ultra sessions based on participation. You are permitted two (2) absences.

**E-mail Policy:** I will reply to your email or Remind message 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 message 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. *Note: I will typically respond via **the Remind app faster**.*
***You are strongly advised to use the discussion board to get answers from classmates & CSI Leaders. Use your resources wisely! – I am not the only one available.***

**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:

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| Pre-Class<br>*CHEM101*<br><br>[PC ##] | Before each lecture session you will be required to complete preparatory questions to prepare you for class. These problems are not intended to replace the benefits of reading the textbook, but rather to summarize key skills and concepts. To receive full credit these assignments must be completed at least 10 minutes before the start of the class session.<br><br>You will have a total of 22 PCs assigned during the semester in CHEM101. You can complete these at any time before the deadline.<br><br>You **must** complete these assignments **independently**.<br>Collaboration with classmates, tutors, or anyone other than the instructor is a violation of the Honor Code and against the academic integrity statement.<br><br>You are encouraged to use your textbook or resources on ***this*** course's Blackboard site. **No other resources may be used.** |
| Homework<br>*CHEM101*<br><br>[HMWK #] | During the semester you will be required to turn-in homework 10 times via CHEM101. Although answered electronically, you need to keep a notebook or journal where you solve all homework problems *by hand*.<br><br>Your grade on homework assignments is determined by the score you earn completing the assignment in CHEM101 before the deadline.<br><br>You need to do homework problems **daily** to be successful in this course.<br><br>To earn a score higher than C for this course you **must *also*** work practice problems from each chapter in the textbook. To this aim, a list of recommended textbook problems is posted on Blackboard. |
| Quizzes<br>*Blackboard*<br><br>[Quiz #] | These problem solving questions must be completed online in Blackboard during scheduled lecture time in 10 – 15 minutes. This will be excellent practice to prepare for exams as these are timed assignments.<br>You must do quizzes without the use of outside resources.<br>**You CANNOT use your textbook or class notes for quizzes and exams.** |
| Exams<br>*Blackboard* | There will be four (4) exams in Blackboard throughout the semester as outlined in the tentative course calendar. **I will not offer make-up exams.**<br><br>To earn full credit, you must upload step-by-step work for ***all*** the open-response and essay problems. They will be clearly marked with instructions.<br><br>There are **no dropped exams.**<br>All four (4) exam scores count towards your course grade.<br>**Reminder: you CANNOT use internet, textbook or notes for exams.** |
| Final Exam<br>*Blackboard* | The final exam is on Thurs May 6th from 8:00 am – 10:00 am in Blackboard. |

## Laboratory Grade:

There will be 8 **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** (20 %): You must complete in Blackboard this assignment for each Lab Module. Any assigned work must be **submitted** in Blackboard before start of your lab time.

**Post-lab and Data** (60 %): 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.

**Notes for success**:

- Your work is always graded – so show all of it! In great detail.
- Do not skip steps for calculations.
- Give thorough explanations for your work.
- Use proper formatting of superscripts and subscripts.
- For all calculations using the Equation Editor in Word is a *requirement*.
- Sig figs and units ALWAYS matter – they always count.
- **Pro tip**: Make sure you have pressed the submit button in Blackboard!

**Participation** (20%): you must come to lab in proper attire. You must be wearing your lab goggles, mask, 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 forget to have a copy of lab instructions*: –5%
*If do not clean-up before leaving*: –5%
*If eating, drinking, or removing goggles/mask during lab*: **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 Wed Jan 20 at 9:00 am:
https://www.uca.edu/web/forms/view.php?id=1487

## Extra Credit:

There will be at least two extra credit options:

You can do two (2) surveys which can each replace a single Pre-Class assignment grade.
You must complete the survey in good faith for credit.
Surveys will be at the beginning and at the end of the semester.

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

| Wk | Dates | Topics | Reading† | Pre-Class Assignments due before 7:50 am | Post-Class Assignments due before 11:59 pm |
|---|---|---|---|---|---|
| 1 | [0]T – Jan 19 | Introductions & Expectations<br>CHEM 1450 Review | ***Syllabus***<br>***CHEM101*** | PC 1 | Lab Safety due |
| | *W/R – Jan 20/21*<br>*Lab* – ALL Online | *Excel Workshop*<br>*Group A & B (online)* | ***BB*** | | |
| | [1]R – Jan 21 | intermolecular forces<br>surface tension, viscosity<br>colligative properties intro | *(5.10)*<br>***11.2 – 11.4*** | ***Quiz 1***<br>PC 2 | Excel Workshop<br>Assignment due Fri Jan 22 |
| 2 | *M – Jan 25* | *last day to drop (100% refund) and last day to add classes* | | | |
| | [2]T – Jan 26 | heating curves<br>phase change diagrams<br>solid & gas solubility<br>solutions and mixtures | *(9.6, 9.7)*<br>***11.5 – 11.9*** | PC 3 | HMWK 1 due Wed Jan 27 |
| | *W/R – Jan 27/28*<br>*Lab* – ALL Online | *Orientation & Safety*<br>*Group A & B (online)* | ***BB*** | | |
| | [3]R – Jan 28 | solubility vs saturation<br>solution enthalpy<br>concentration units | *(8.4)*<br>***13.2,***<br>***13.4 – 13.5*** | ***Quiz 2***<br>PC 4 | |

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| 3 | [4]T – Feb 2 | colligative properties<br>Raoult's Law<br>boiling point elevation<br>freezing point depression | ***13.6 – 13.7*** | PC 5 | HMWK 2 due Wed Feb 3 |
| | *W/R – Feb 3/4*<br>*Lab 1 – ALL Campus* | *Lab 1 - Sugar Density*<br>*Group A/B in Manion 206* | ***BB*** | Pre-lab | |
| | [5]R – Feb 4 | **EXAM 1 (ch. 11 & 13)** | *study* | | Post-lab 1 due Fri Feb 5 |
| 4 | *M – Feb 8* | *last day to drop (75% refund)* | | | |
| | [6]T – Feb 9 | reaction rates<br>average & instantaneous rates<br>finding rate law experimentally | ***14.2 – 14.4*** | PC 6 | |
| | *W/R – Feb 10/11*<br>*Lab 2* – Group A | *Lab 2 – Kinetics*<br>*Group A* | ***BB*** | Pre-lab | |
| | [7]R – Feb 11 | integrated rate laws, half-life<br>rate laws from graph data<br>basic reaction mechanisms | ***14.5,***<br>***14.7 – 14.8*** | ***Quiz 3***<br>PC 7 | HMWK 3 due Fri Feb 12 |
| 5 | [8]T – Feb 16 | *Review* | | PC 8 | |
| | *W/R – Feb 17/18*<br>*Lab 2* – Group B | *Lab 2 – Kinetics*<br>*Group B* | ***BB*** | Pre-lab | |
| | [9]R – Feb 18 | equilibrium constant<br>reaction quotient<br>calc. equilibrium concentration | ***15.2 – 15.8*** | ***Quiz 4***<br>PC 9 | HMWK 4 due Fri Feb 19<br>Post-lab 2 due Fri Feb 19 also |
| 6 | [10]T– Feb 23 | calc. equilibrium concentration<br>Le Châtelier's principle | ***15.8 – 15.9*** | PC 10 | |
| | *W/R – Feb 24/25*<br>*Lab 3* – ALL Online | *Lab 3 – Le Châtelier's Principle*<br>*Group A & B (online)* | ***BB*** | Pre-lab | |
| | [11]R –Feb 25 | *Review* | | ***Quiz 5***<br>PC 11 | HMWK 5 due Fri Feb 25 |

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|---|---|---|---|---|---|
| 7 | [12]T – Mar 2 | **EXAM 2 (ch. 11, 13 – 14)** | *study* | | |
| | *W/R – Mar 3/4*<br>*Lab 4* – Group A | *Lab 4 – Weak Acid Titration*<br>*Group A* | ***BB*** | | |
| | [13]R – Mar 4 | acid-base theories<br>conjugate acid-base pairs<br>acid base strength ($K_a$ & $K_b$) | ***16.2 – 16.5***<br>***16.11*** | PC 12 | Post-lab 3 due Fri Mar 5<br>HMWK 6 due Mon Mar 8 |
| 8 | [14]T – Mar 9 | pH calculation strong acid/base<br>pH calculation weak acid/base<br>acid-base properties of salts | ***16.6 -16.10*** | PC 13 | |
| | *W/R – Mar 10/11*<br>*Lab 4* – Group B | *Lab 4 – Weak Acid Titration*<br>*Group B* | ***BB*** | Pre-lab | |
| | [15]R– Mar 11 | buffers<br>strong acid-base titration curve | ***17.2 – 17.4*** | ***Quiz 6***<br>PC 14 | HMWK 7 due Fri Mar 12 |
| 9 | [16]T – Mar 16 | strong-weak titration curves<br>titration problems | ***17.4 – 17.5*** | PC 15 | |
| | *W/R – Mar 17/18*<br>*Lab 5* – ALL Online | *Lab 5 - Titration Practice*<br>*Group A & B (online)* | ***CHEM101*** | | |
| | [17]R – Mar 18 | solubility equilibria ($K_{sp}$)<br>common ion effect | ***17.6*** | ***Quiz 7***<br>PC 16 | Post-lab 4 due Fri Mar 19<br>Lab 5 due Mon Mar 29 |
| | F – Mar 19 | **Co-Curricular Graphing Assignment due by 11:59 pm in Blackboard** | | | |
| 10 | *M – F: Mar 22 – 26* | ***Spring Break*** | ***[No Classes]*** | | |
| 11 | [18]T – Mar 30 | *Review* | | | Lab 5 due Mon Mar 29 |
| | *W/R – Mar 31/Apr 1*<br>*Lab 6* – Group A | *Lab 6 - Thermodynamics*<br>*Group A* | ***BB*** | Pre-lab | |
| | [19]R – Apr 1 | **EXAM 3 (ch. 11, 13 – 16)** | *study* | | |

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| 12 | $^{20}$T – Apr 6 | spontaneity, entropy, enthalpy | ***18.2 – 18.4*** *(9.10)* | PC 17 | |
| | *W/R – Apr 7/8* *Lab 6* – Group B | *Lab 6 - Thermodynamics* *Group B* | ***BB*** | Pre-lab | |
| | $^{21}$R – Apr 8 | free energy free energy and equilibrium | ***18.6 -18.10*** | PC 18 | HMWK 8 due Fri Apr 9 |
| 13 | M – Apr 12 | *final date to withdraw (W) from classes, after this must receive grade A, B, C, D, or F* | | | |
| | $^{22}$T – Apr 13 | balancing redox reactions galvanic cells | *(8.9)* ***19.2 – 19.3*** | | |
| | *W/R – Apr 14/15* *Lab 7* – ALL Online | *Lab 7 - Redox Practice* *Group A & B (online)* | ***19.4*** | Pre-lab | |
| | $^{23}$R – Apr 15 | standard reduction potentials $E_{cell}$, free energy, equilibrium | ***19.4 – 19.6*** | ***Quiz 8*** PC 19 | HMWK 9 due Fri Apr 16 Lab 6 due Fri Apr 16 also |
| 14 | $^{24}$T – Apr 20 | electrolysis | ***19.8*** | PC 20 | |
| | *W/R – Apr 21/22* *Lab 8* – ALL Online | *Lab 8 – Electrochemistry* *Group A & B (online)* | ***BB*** | Pre-lab | |
| | $^{25}$R – Apr 22 | nuclear chemistry | *(1.8)* ***20.2 – 20.3*** ***20.6*** | ***Quiz 9*** PC 21 | Lab 7 due Fri Apr 23 |
| 15 | $^{26}$T – Apr 27 | *Review* | | ***Quiz 10*** | HMWK 10 due Wed Apr 28 |
| | *W/R – Apr 28/29* *Lab* – ALL Online | *Final Exam Review* *Group A & B (online)* | ***BB*** | | |
| | $^{27}$R – Apr 29 | **EXAM 4 (ch. 11, 13 – 18)** | -- | | Lab 8 due Fri Apr 30 |
| *fin* | **R – May 6** | **Final Exam 8:00 am – 10:00 am** | | | |

**The instructor reserves the right to change the schedule at any time, with exception of lab and exam dates (unless the university closes). All reading should be done before attending that day's class session.

Notes:

- Pre-class assignments (PC ##) are due by 7:50 am the day they are listed
- Lab titles in italics are actual lab modules (8 total): meaning you have a pre-lab ***and*** post-lab assignment to turn-in for each.

## 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/.

**Technology Instructions:**

**Blackboard** – contains exams, quizzes, class slides, lecture videos, practice handouts, extra practice problems, announcements, syllabus, evaluation forms, etc.

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"
Find and click on "COLLEGE CHEMISTRY II" in the list for Spring 2021

**CHEM101** – You must register for a trial account **before** Tuesday Jan 19th (first day of class) using your UCA email account. The trial account is free for 14 days.
After the 14-day trial ends you must pay for continued access and to earn grades.

You will find instructions on how to set-up your CHEM101 account via Blackboard under *Syllabus*. Your pre-class assignments, homework, and occasionally in-class problems will be assigned via CHEM101.

Use the website link: https://www.101edu.co/login to get started each class day.

## Syllabus highlights:

- **Attendance online is mandatory** for lecture and lab.
- PCs (Pre-Class) work due before start of class at 7:45 am in CHEM101
- Late assignments only possible for post-lab and co-curricular IF ASK in advance.
  - Must make an email request before the deadline to submit late.
  - If granted, due in 24 hours from due date and will earn **at most** 50% credit.
  - Late is late, is late: The definition of late is **after** the start of class or after designated due date and time. Two days, two minutes, one minute, or 10 seconds after any deadline will all be marked as late.
  - CHEM101 and Pre-Lab assignments can**NOT** earn late credit.
- **No** make-up exams/assignments offered. Keep deadlines in mind. *(see bullet point above)*
- Meet with me if you need. Don't wait!
  You can meet me either by appointment: https://tinyurl.com/MeetingMasseySpring2021
  or during Virtual Q&A Sessions on Fridays at 10:30 – 11:30 am in BBCU
- **Exam times during scheduled class 8:00 am – 9:15 am CT**:
  - Exam 1 – Thursday, Feb 4th
  - Exam 2 – Tuesday, Mar 12th
  - Exam 3 – Thursday, Apr 4th
  - Exam 4 – Thursday, Apr 29th
- **Final exam**: Thursday, May 6th, 2021 at 8:00 am – 10:00 am CT

## Basic Rules of Success for Dr. Massey's class:

1. **Follow directions.**
2. **Always report units. (If you fail to do so, you will lose all points on that problem!)**
3. **Be on time. (Attending class and lab *and* when submitting assignments)**

# Chemistry Supplemental Instruction (CSI) Recitations

This course includes access to UCA's Supplemental Instruction (SI) program, and recitation sessions with a SI Leader. SI is a study group approach to learning that helps you learn "what to learn" as well as "how to learn." SI consists of regularly scheduled, out-of-class group study sessions that are facilitated by trained peer, SI leaders. SI is a free service offered to all students in this course. This course is a special section where these recitation session are built into your MyUCA course registration process. As such, SI Session attendance is **required** as a means for improving your success in the course.

What can you expect?:

- weekly sessions with a mentor guiding you on how to **apply** knowledge learned in class to solve & understand problems
- a place to learn strategies to be successful in ***Dr. Massey's*** CHEM 1451 course
- a tailored experience offered by a peer who successfully completed CHEM1451 class with an A or B

See the course Blackboard page link titled "CSI Recitations" for more information.
Your CSI Recitations will be with either **Zane Ashcraft or ___** (CSI leaders) during the time listed as "Recitation" in MyUCA (attached with your CRN) or at the start of the syllabus.

**Use the discussion boards in Blackboard to ask questions and to find answers to questions. It is likely your question was answered during lecture and you just don't remember or missed it in your notes. Dr. Massey is not your only resource, ask others first.**

**A note on Classroom Etiquette:**
You are expected to be ***engaged*** and respectful of everyone's time in lab and class. Electronics can only be used for participating in class activities. The same is true for your CSI recitation sessions. You can lose points on your overall course grade for not being an ***active*** participant.

Note that ONLY calculators can be used for exams and quizzes. Cellphones, tablets, laptops and other electronics cannot be used in place of calculators.

## General Information:

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| Academic Integrity | **Cheating and plagiarism (using someone else's work as your own) will not be tolerated.** Severe penalties will result from any form of academic dishonesty. This is never worth the risk.<br><br>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.<br><br>To clarify what constitutes plagiarism please see the following link: http://uca.edu/academicaffairs/files/2012/08/Plagiarism.pdf |
| 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 the 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.* |
| Student Evaluations | Student evaluations of a course and its professor are a crucial element in improving your experience in class and for UCA to demonstrate that student growth. I encourage you to evaluate the courses you are taking starting on the Monday of the 13th week of instruction through the end of finals week by logging in to myUCA and searching "Evals" for the "Course Evaluation" button. Try this link: https://my.uca.edu/tasks/course-evaluations/?launch |

**It is also the responsibility of students to read the Student Handbook. In particular you need to familiarize yourself with the Sexual Harassment Policy and Academic Policies.**