Spring 2022 College Chemistry III (CH 123)

Lecture (CRN 43435)

- **Online lectures (Moodle):** M, W, F – *follow class schedule strictly for each lesson*
- **Virtual review sessions (Zoom):** 11 AM – 12:20 PM on Wed. of week 1, 3, 6, 9 and Fri. of week 10
- **In-person exams (MH 208):** 11 AM – 12:20 PM on Fri. of week 3, 6, 9
- **In-person final exam (MH 208):** 10 AM – 11:50 AM on Mon. of week 11

Laboratory (CRN 43650)

- **In-person lab (MH 206):** 9 AM – 11:50 AM on Thursday of week 1 – 10

Laboratory (CRN 43651)

- **In-person lab (MH 206):** 1 PM – 3:50 PM on Thursday of week 1 – 10

Lecture Instructor: Dr. Ommidala Pattawong (pattawo@linnbenton.edu)

- **Office Hours:** By appointment via https://koalendar.com/e/meet-with-ommidala-pattawong

Lab Instructor: Mrs. Joanna Bownik (bownikj@linnbenton.edu)

- **Office Hours:** Thur. 4-5 PM in MH 206 and Wed. 4-5 PM via https://linnbenton.zoom.us/j/6421881742

Course Information:

This is the third of a three-term college chemistry sequence for students in, human performance, certain health occupations programs, agriculture, animal science, and fisheries and wildlife. This sequence is for students who have had no previous training in chemistry and whose program of study requires only a one-year sequence of college chemistry. Topics include acid-base equilibrium, buffers, ionic equilibrium, thermodynamics, electrochemistry, and organic chemistry.

Online Class and Equipment Requirements

Our class this term is an online class with a live session on most Wednesday (see course schedule, page 6). The online video lessons are posted on Moodle**.** Students need to manage time to complete watching lecture videos and completing problem sets within the timeline that is set on our course schedule prior to the live session on Wednesday to be on track (see the last page of this syllabus).

LBCC is encouraging students to obtain the equipment you will need to be successful in online classes. Please see the list of equipment below. Students who cannot afford these resources can contact the Roadrunner Resource Center about funding.

- A computer
- A stable internet connection
- A speaker
- A web camera
- A microphone
- A scanner or a device that can take picture

Online Participation and Online Workload Expectation:

Even though our lecture is online, and everything is provided for you, this doesn't mean that you can just watch videos and think you can pass the class. You are still expected to participate in the course by reading textbook, practicing problems, jotting down notes, and completing homework. The amount of in class work for this 5-credit course is about 6.5 hours per week. The amount of outside class work recommended by the college for a 5-credit course is about 15 hours per week. Students will need to manage schedule and time for chemistry accordingly. Examples of outside work include writing lab reports, reading, reviewing lecture materials, study time, working practice problems, and doing homework assignments.

My recommendation for you is to block out about 3 – 4 hours a day to do chemistry, so that you won't feel overwhelmed.

Student Learning Outcomes:

1. Solve scientific problems with quantitative methods regarding acid-base equilibrium, buffers, ionic equilibrium, thermodynamics, and electrochemistry.
2. Apply chemical principles related to acid-base equilibrium, buffers, ionic equilibrium, thermodynamics, electrochemistry, and organic chemistry.
3. Work safely in a laboratory environment while observing and accurately recording measurements related to chemical phenomena.

Minimum Requirements:

Prerequisites: CH 122, CH 202, or CH 222 with a grade of C or better.
Corequisite: CH 123L

Required Course Materials (Available for you to purchase at the bookstore):

1. Access code for Knewton Alta online homework *(The access code from previous term works.)*
2. Chemistry 123 lecture manual
3. Bound laboratory notebook with numbered pages and carbonless copies. *(If there are sufficient pages remaining in your CH 122 laboratory notebook, you can use it for this term.)*
1. Full lab goggles with indirect vents
2. Non-graphing/non-programmable Scientific Calculator (TI 30xa). Students will be required to use a non-graphing/non-programmable scientific calculator for quizzes and/or exams.

Attendance and Classroom Decorum:

Class attendance and participation are very important to be successful in the learning of chemistry. Students are encouraged to attend class regularly, on time, and engage in activities and/or discussions. Cell phone use is distracting to others and is not allowed in the classroom. If you need to use cell phone, please step outside the classroom. The use of a laptop computer during lecture class is approved for CH 123 lecture material only, i.e. lecture is not a time to do homework.

Grade Assessments:

Your grade will be assigned based on your performance in the following areas:

Course Overview Quiz			10 pt. (2%)
Laboratory Exercises	10 x 20 pt.	=	200 pt. (33%)
Homework	6 x 15 pt.	=	90 pt. (15%)
Exams	4 x 75 pt.	=	300 pt. (50%)
Total			600 pt. (100%)

Course Grade:

Assignment of course grades will follow an approximate breakdown of

- A = 90-100% Excellent Work
- B = 80-89% Good Work
- C = 70-79% Average Work
- D = 60-69% Poor Work
- F = 0-59% Failing Work

An incomplete grade (I) may be given at the discretion of the instructor. However, a student must have a passing grade at the time an incomplete is assigned. **Your grade in the course is <u>not negotiable</u> and will be assigned based on your performance on the exams, homework, labs, etc.; your letter grade will NOT be assigned based on the instructor's subjective opinion of your effort in the course.**

Exam Policies and Expectations:

Four in-person exams throughout the term will be used to evaluate your understanding of the materials. The exams must be taken on the scheduled date unless prior arrangement is made. Students who have conflicts with exam days due to other College functions, illness, or family emergencies must contact the instructor prior to the exam. Documentation of the College function, illness and/or family emergency must be provided to schedule a make-up exam. **Failing to take the exam on the scheduled date will result in a score of zero.**

Students take exams in Madrone Hall 208 on Friday of week 3, 6, 9 from 11 AM – 12:20 PM and Monday of week 11 from 10 – 11:50 AM.

You are allowed to bring one 3" x 5" notecard with notes on both sides *(example problems are not allowed in a notecard – 15% penalty will be applied if any),* pens/pencils, eraser, and a non-graphing/non-programmable scientific calculator to the exams. Any academic dishonesty during any exams including cheating, using electronic devices, cell phones, lecture materials, or books that are not permitted, will result in a score of ZERO for the exam!

Exams are designed for everyone who studies and keeps up with the lecture materials to be able to complete the exams within the exam time limit. If you are struggling to complete the exams, it indicates that you are not prepared and have not mastered the essential chemistry skills yet. If this happens to you, please reach out to me as soon as possible, so that we can discuss study strategies and exam taking strategies for future exams.

Virtual Review Sessions:

Zoom review sessions are on Wednesday of week 1, 3, 6, 9, and Friday of week 10 from 11:00 AM – 12:20 PM. Students access the zoom link from Moodle. These sessions are designed to help students preparing for exams, reviewing materials, and address any concerns. My hope is that even though the lectures are online, my students will still feel confident and prepared entering into the exams.

Laboratory Exercise

The laboratory experience is a vital part of this course. **The first lab is mandatory to get you ready with lab safety and future lab expectations.** Students are expected to attend the laboratory at their scheduled time. Failure to complete the laboratory work or to hand in all the assigned laboratory reports may result in a lowered grade. Students must set up lab notebook and complete pre-lab assignments prior to the lab. Without pre-lab assignments, students are not allowed to do labs**.** Late arrival to lab(s) will not be permitted to do the lab(s). No make-up labs will be given. **You must receive at least 70% of the total lab points in order to pass the course regardless of passing the lecture.** Note: Regarding future prevalence of COVID, we cannot change modality of the lab unless instructed to do so by LBCC. Our labs will always meet in person.

You can miss up to two in-person labs and have sample data supplied in order to complete the post-lab assignments. However, students will receive a deducted 15% penalty from the completed scored. Additional missed lab sessions will result as a 0 for the post-lab assignment. Contact your lab instructor to discuss missed in-person labs.

Homework:

To succeed in chemistry, like learning a foreign language, you should study and practice every day. As material is covered you will find the problems are easier to work and not as time consuming as if they are attempted just before the due date. You can access Knewton Alta for the online Homework via Moodle site. Each chapter homework is worth 15 points. Homework is due by 11:59 pm on the dates listed on the schedule.

****NOTE:** To access homework assignments, go to Moodle course and click one of the homework assignments.

For late online homework*, students can turn in completed assignments after the due date up to 7 days late. However, students will receive a deducted* ***5% penalty*** *from the completed scored per day late.*
For late paper homework, *students will receive a score of zero once the solution is released.*
For the last homework, *late submission will be accepted until 6/5/2022 because all homework scores will need to be compiled by the end of week 10.*

Extra Credit:

1. *First Class Attendance:* If you joint the zoom meeting and answer exit ticket on the first day of class, you will receive 5 points.
2. *Self-Reflections:* Students who submit the self-reflections are eligible for a total of 15 extra credit points. The self-reflection will give you a chance to reflect on your exam performance and, more importantly, on the effectiveness of your exam preparation.
3. *Optional Course Feedback: This course feedback will be available in Moodle under "Week 10" section, "Week 10 To Do List". This survey is NOT the same survey sent by LBCC.* This anonymous survey is worth 5 points.

Science Help Desk:

The Science Help Desk is a drop-in help in chemistry, physics, geology, and astronomy courses. The in-person Science Help Desk is located on the first floor of Madrone Hall in the atrium area. The remote Science Help Desk is offered via Zoom. You can find hours of the Science Help Desk at the Learning Center website at https://www.linnbenton.edu/student-services/library-tutoring-testing/learning-center/science-support.php

Roadrunner Resource Center for Basic Needs:

Any student who has difficulty affording tuition, course materials, hygiene materials, food, who lacks a safe and stable place to live, who needs transportation, and believes this may affect their performance in the course, is urged to contact the Roadrunner Resource Center for support (Resources@linnbenton.edu).

Center for Accessibility Resources:

LBCC is committed to inclusiveness and equal access to higher education. If you have approved accommodations through the Center for Accessibility Resources (CFAR) and would like to use your accommodations in the class, please talk to your instructor as soon as possible to discuss your needs. If you believe you may need accommodations but are not yet registered with CFAR, please visit the CFAR Website for steps on how to apply for services or call (541) 917-4789.

Drop/Withdraw Policy:

If you are withdrawing from the class you must file a Schedule Change Form with Registration or use WebRunner. If you formally drop the class by Monday of the second week of the term, you will receive a tuition refund. If you withdraw after the Monday of the second week of instruction through the seventh week a 'W' will show up on your transcript. No withdrawals are allowed after the end of the seventh week. An instructor may not assign a "W" grade. If you received financial aid or veteran's benefits PLEASE talk with associates at the appropriate office to determine what effects on eligibility dropping a course will have. Don't jeopardize your eligibility!! You can contact the Financial Aid Office by calling (541) 917-4850. If you stop attending the course without formally withdrawing you will continue to accumulate grades (zeroes for all assignments not turned in) and will receive the grade assigned by the instructor. You will also be held accountable for all charges on your account.

Academic Integrity:

"An instructor has the right to issue a grade of F for the course in which the instructor has reason to believe the student has cheated. A student has the right to appeal such action in accordance with the Students' Rights, Responsibilities and Conduct Policy." The preceding statement is Administrative Rule No. 7030-02.

LBCC Comprehensive Statement of Nondiscrimination:

LBCC prohibits unlawful discrimination based on race, color, religion, ethnicity, use of native language, national origin, sex, sexual orientation, gender, gender identity, marital status, disability, veteran status, age, or any other status protected under applicable federal, state, or local laws. For further information see Board Policy P1015 in our Board Policies and Administrative Rules.

Changes to the Syllabus:

The instructor reserves the right to change the contents of this syllabus due to unforeseen circumstances. You will be given notice of relevant changes in class, through a Moodle Announcement, or through LBCC e-mail.

Course Content

Chapter 14 Acids and Bases

14.1 – Definitions of Acid and Base
14.2 – Acid and Base Strength and Their Molecular Structures
14.3 – Acid Ionization Constant
14.4 – Autoionization of Water, pH, and pOH
14.5 – Base Ionization Constant
14.6 – pH and pOH Calculations for Strong Acids and Strong Bases
14.7 – pH and pOH Calculations for Weak Acids and Weak Bases
14.8 – The Acid-Base Properties of Salts

Chapter 15 Neutralization Reaction, Buffers, and Titrations

15.1 – Neutralization Reaction
15.2 – Buffers
15.3 – Titrations and pH curves

Chapter 16 Precipitation and Aqueous Ionic Equilibrium

16.1 – Precipitation Reactions
16.2 – Solubility Equilibria and the Solubility Product Constant
16.3 – Coupled Equilibria

Chapter 17 Thermodynamics

17.1 – Spontaneous and Nonspontaneous Processes
17.2 – Entropy and the Second & Third Laws of Thermodynamics
17.3 – Gibbs Free Energy

Chapter 18 Electrochemistry

18.1 – Redox Reactions
18.2 – Spontaneous Redox Reactions – Galvanic (or Voltaic) Cells
18.3 – Electrode and Cell Potentials
18.4 – Batteries and Fuel Cells
18.5 – Nonspontaneous Redox Reactions – Electrolysis
18.6 – Potential, Free Energy, and Equilibrium

Chapter 19 Organic Compounds

19.1 – Organic Compounds
19.2 – Structural Representations
19.3 – Isomerism
19.4 – Hydrocarbons
19.5 – Nomenclature of Hydrocarbons
19.6 – Functional Groups

Course Schedule

Follow this schedule to complete each task.

All homework assignments are due by 11:59 pm on the date indicated on the schedule.
All the lab assignments are due at the beginning of labs.

Week	Mon.	Wed.	Thurs	Fri.
1 (3/28-4/1)	14.1 – 14.3	Live Session	Lab 1: Lab Introduction & Safety Activities Due In-Lab Safety & Syllabus Quiz	14.3 – 14.5
2 (4/4-4/8)	14.6 – 14.7	14.7 – 14.8	Lab 2: pH of Acids, Bases, and Salts Due In-lab | Due Online Pre-lab 2 | HW Ch. 14/1	15.1 – 15.2
3 (4/11-4/15)	15.2 – 15.3	Live Review Session	Lab 3: Buffers Due In-lab | Due Online Post-lab 2 | Pre-lab 3 | HW Ch. 14/2	Exam Chapter 14 (11 AM -12:20 PM) (MH 208)
4 (4/18-4/22)	15.3	16.1 – 16.2	Lab 4: Acid Content in Vinegar Due In-lab | Due Online Post-lab 3 | Pre-lab 4 | HW Ch. 15	16.2 – 16.3
5 (4/25-4/29)	17.1 – 17.2	17.3	Lab 5: Acid Content in Fruit Juice Due In-lab | Due Online Post-lab 4 | Pre-lab 5 | HW Ch. 16 Self-Reflection	17.3
6 (5/2-5/6)	18.1	Live Review Session	Lab 6: Solubility and K_{sp} Due In-lab | Due Online Post-lab 5 | Pre-lab 6 | HW Ch. 17	Exam Chapter 15&16 (11 AM -12:20 PM) (MH 208)
7 (5/9-5/13)	18.1	18.2 – 18.3	Lab 7: Thermodynamics Due In-lab | Due Online Post-lab 6 | Pre-lab 7 | HW Ch. 18/1	18.4 – 18.6
8 (5/16-5/20)	18.6	19.1 – 19.3	Lab 8: Electrochemical Cells Due In-lab | Due Online Post-lab 7 | Pre-lab 8 | HW Ch. 18/2 Self-Reflection	19.3 – 19.4
9 (5/23-5/27)	19.4 – 19.5	Live Review Session	Lab 9: Making Esters Due In-lab | Due Online Post-lab 8 | Pre-lab 9 | HW Ch. 19/1	Exam Chapter 17 (11 AM -12:20 PM) (MH 208)
10 (5/30-6/3)	Holiday	19.5 – 19.6	Lab 10: From Waste to Wash Due In-lab Post-lab 9 | Pre & post lab 10	Live Review Session Due Online HW Ch. 19/2 Self-Reflection Course Survey
11 (6/6-6/10) *Final Week*	Exam Chapter 18&19 (10-11:50 AM)			