

# Chemistry 247 – Quantitative Analysis Lab

## Course Syllabus

### Fall 2020

**Instructor:** Dr. Laura J. Cole  
**Office:** 412 Chemistry Biology Building  
**Phone:** (715)346-4302  
**Email:** lcole@uwsp.edu  
**Canvas:** Chemistry 247

**Office hours:** MWF 11:00 am – 11:50 am, T 10:00 am – 10:50 am on Zoom. These will be scheduled via Microsoft Bookings for 10 minute intervals. If you will need more than 10 minutes, please schedule more than one interval.

<https://outlook.office365.com/owa/calendar/DrColesOfficeHours@uwspedu.onmicrosoft.com/bookings/>

If none of these scheduled times work for you, please contact me and we can setup an alternate time.

#### Class Sessions

**Laboratory:** 01L1 M, W 2:00 - 4:50 CBB 466 & 476 Dr. Cole

#### Course Description

Chemistry 248 is a course where the principles of quantitative analysis will be examined. Topics that will be covered include statistics and data analysis, acid-base equilibrium, gravimetric analysis, complexation reactions, spectroscopy, electrochemistry, and chromatography.

#### Required Materials

**Laboratory Manual:** Quantitative Analysis Experiments that is available for purchase at the bookstore.

**Laboratory Goggles:** These must be goggles, not glasses. They are to be purchased from the bookstore or nicer ones may be purchased from the Chemistry Club at the start of the semester.

**Face Coverings:** At all UW-Stevens Point campus locations, the wearing of face coverings is mandatory in all buildings, including classrooms, laboratories, studios, and other instructional spaces. Any student with a condition that impacts their use of a face covering should contact the [Disability and Assistive Technology Center](#) to discuss accommodations in classes. Please note that unless everyone is wearing a face covering, in-person classes cannot take place. This is university policy and not up to the discretion of individual instructors. Failure to adhere to this requirement could result in formal withdrawal from the course.

**Laboratory Notebook:** Permanently bound, quadrille ruled which is available for purchase at the bookstore or other stores.

**Calculator:** A non-programmable scientific calculator for use on exams.

## **Policies & Procedures**

**Attendance:** It is important to attend all of the laboratory sessions of the class. Material missed due to absence is your responsibility.

**Laboratory:** One of the primary objectives of this course is to introduce you to techniques of quantitative analysis. Since proper techniques are emphasized, the accuracy of your results is an important part of your grade. Overall, the accuracy of your results contributes about 90% to your grade. You will be expected to perform the experiments in your designated class period. You will be allowed to work at your own pace with specific due dates for each experiment. As long as the results are reported by the deadline, you are on schedule.

- **Be prepared.** It is important to be prepared for each laboratory period. The semester will go much more smoothly if you read the experiments before coming to lab and understand the purpose and procedures that will be performed. It is also worthwhile to prepare your laboratory notebook ahead of time for your data entries. Laboratory time should be used doing experiments and not figuring out what to do next!

In some experiments there are long waiting times - you can use this time to start another part of the experiment or a new experiment. Therefore, it is also extremely important to notice when this might occur and plan your day accordingly.

**Laboratory Notebook:** The laboratory notebook is an important record of the work that you have performed. It is vital that the notebook be kept organized and neat. If data is recorded wrong, one line is placed through the number in error and the corrected value written next to it. It is essential that all of the data that you take be recorded in the lab notebook as the data is taken and only on the right hand page. Otherwise, data can be misplaced, lost or stolen. The laboratory notebook will be collected when each experiment report is done.

- **Organization of Lab Notebook:** (5 points possible per experiment)
  1. All entries must be made in **ink** which will not run or smear when wet.
  2. Up-to-date Table of Contents at the beginning of the notebook.
  3. Sequentially numbered pages on the right hand side.
  4. The date and your signature at the top of each page on the first page where data are recorded, as well as at the end of the day's data.
  5. On the first page and/or following pages for each experiment: the title of the experiment, purpose of the experiment, and procedure for the experiment including chemical reactions that are important. The data tables will follow.
  6. A complete record of all data taken. All data should be labeled (with units) and should have a heading indicating what the data represent. Any errors should be marked through with only one line, dated and initialed.
  7. One set of sample calculations for each calculation made.
  8. A summary of your results – please tape your report sheet into the notebook.
  9. Conclusions about your experiment and results.

An example of the organizational setup for the laboratory notebook will be distributed.

**Laboratory Results:** The score for this part of each experiment is based on the accuracy of the results. Each experiment is worth 50 points for your accuracy grade and 5 points for your lab notebook. Since there are six regular experiments, regular laboratory reports will be worth a possible 330 points.

It is possible to **Redo**, or **Recalculate** any results.

**Redo** - The experiment may be repeated **once** with a new unknown (if time permits). The new score will be the average of the two scores. **Redo** experiments must be completed, and turned in within three weeks of the original due date.

**Recalculate** - In the case of a calculation error a new report must be submitted along with an indication in your lab notebook of where the error occurred. Errors in judgment may not be used to recalculate a result. For example, you may not change your result to a median value from a mean or vice versa. You should discuss recalculations with your laboratory instructor. Your new score will be determined by subtracting ten points from your “recalculated” score. Recalculations must be submitted within one week of the original due date.

Late lab reports will have ten points subtracted from the score for each day that the lab is late. Late lab reports may not be redone or recalculated.

**Formal Report:** For the vanillin experiment, a formal report will be required. The material that should be included in the report is in the lab manual. A first draft is required for the formal report which is worth 15 points. The final draft will be worth 35 points.

**Electronic Resources:** A Canvas course site has been set up for our course. You can access it from [www.uwsp.edu/canvas](http://www.uwsp.edu/canvas) and log in with your UWSP log on information.

**Safety:** Each student is expected to work safely (as outlined by the instructor, the lab safety agreement, MSDS’s, and/or label information) at all times. Unsafe behavior will not be tolerated. In the event of behavior deemed unsafe by the laboratory instructor, the instructor may dismiss the student from that day’s activities. The student will not be allowed to make up that lost time. If documented unsafe behavior continues, the student may be dismissed from the course.

**Grading:** The course grade will be determined by the sum of the points received from the following:

Laboratory Reports (Results: 6 at 50 pts ea.; Notebook: 6 at 5 pts ea.)	330
Formal Report (total from rough draft and final draft)	<u>50</u>
Total points	380

The grading scale cutoffs will be as follows: A >353 pts (93%), B: 315 pts (83%), C: 277 pts (73%), D: 239 pts (63%), F < 239 pts (63%). Grades near a cutoff may be assigned + or - designations.

**Academic Responsibility:** Academic misconduct will not be tolerated. Academic misconduct is defined by the UWSP Handbook Chapter 14.03(1). Anyone who engages in academic misconduct will be subject to disciplinary measures according to the UWSP handbook. The handbook chapter can be found using the following web link:

<http://www.uwsp.edu/stuaffairs/Documents/RightsRespons/SRR-2010/rightsChap14.pdf>.

**Disability Services:** Students with disabilities should contact the Office of Disability Services during the first two weeks of the semester if you wish to request accommodation.

**Religious Beliefs:** Religious beliefs will be accommodated according to UWS 22.03, as long as you notify me within the first three weeks of the beginning of classes of the specific days which you will request relief from an examination or academic requirement.

**A Few Notes**

I am looking forward to a fruitful semester of teaching and learning with you in Chemistry 247. In order to help you learn the material, I have office hours which are listed. You may also contact me by phone, email or via Zoom. My class schedule is shown below, so you know when to contact me. Good luck with the semester!

Professor Laura J. Cole

Fall Semester 2020

	Monday	Tuesday	Wednesday	Thursday	Friday	
08:00				105 Lab 3HL1 CBB 230		
09:00	Class Preparation	Class Preparation	Class Preparation		Class Preparation	Class Preparation
10:00		Office Hour Zoom				
11:00	Office Hour Zoom	105 Dis 03D2 Zoom	Office Hour Zoom	Class Preparation		Office Hour Zoom
12:00	Class Prep Preparation	105 Dis 3HD1 Zoom	Class Preparation		Meeting/Seminar	Class Preparation
1:00		105 Dis 03D3 Zoom				
2:00	248 Lab 01L2 CBB 466	Class Preparation	248 Lab 01L2 CBB 466			
3:00						
4:00						

**Chemistry 248**  
**Laboratory Schedule**  
**Lab Schedule**

<b>Week</b>	<b>Date</b>	<b>Experiment</b>	<b>Pages in Lab Manual</b>	<b>Due Dates</b>
1	Sept 2	Check-in and calibration		
2	Sept 10	Calibration and Soda Ash	39-40	
3	Sept 14	Soda Ash	41-51	Soda Ash due 9/23
	Sept 16	Soda Ash	41-51	
4	Sept 21	Mn in Steel	61-79	Manganese due 10/5
	Sept 23	Mn in Steel	61-79	
5	Sept 28	Mn in Steel	61-79	
	Sept 30	Vanillin	81-86	First draft of Formal Report due 10/14
6	Oct 5	Vanillin	81-86	
	Oct 7	Vanillin	81-86	
7	Oct 12	EtOH by Titration	105-112	Ethanol due 10/21
	Oct 14	EtOH by Titration	105-112	
8	Oct 19	EtOH by GC	113-118	GC due 10/28
	Oct 21	EtOH by GC	113-118	
9	Oct 26	Cu/Zn by AA	119-124	AA due 11/4
	Oct 28	Cu/Zn by AA	119-124	
10	Nov 2	Coulometry	125-132	Coulometry due 11/11
	Nov 4	Coulometry	125-132	
11	Nov 9	Make-up		
	Nov 11	Make-up		
12	Nov 16	Make-up		
	Nov 18	Make-up		
13	Nov 23	Check-out		
	Nov 25	Check-out		
14	Dec 1			
	Dec 3			
15	Dec 7			
	Dec 9			
16	Dec 14-17	Finals Week		