



Chemistry 214, Quantitative Analysis Lab Spring 2023 Syllabus

Chem 214-001, 002, 003, Quantitative Analysis Lab (1 credit hour)
January 17 – April 27, 2023

Prerequisite: Chem 106/102 and 112, as well as active attendance or completion of lecture Chem 212.

Lab Location: Flanner Hall 313**

****In-person attendance for synchronous labs is mandatory for every person. No online supplement work is given to any absent students. This is not an online course. No modifications to the course will be made.**

Laboratory Coordinator: Dr. Katrina Binaku

Office Hours in STEM Center, St. Joseph's Hall Cafeteria & ZOOM (Meeting ID: 927 507 9667): [Wednesdays 2:00-2:45pm](#), [Thursdays 10:30-11:15am](#), and by a scheduled appointment (schedule in advance).

Email: kbinaku@luc.edu | **Phone:** (773) 508-8715

Office: Flanner Hall 304 [do not come to office for office hours]

Teaching Assistant (TA): Madelyn Smith (sections 001, 003) and Catherine Barth-Yoakum (section 002). See TA information in the Syllabus tab in Sakai for their contact information and office hour info.

Course Meeting Times: Students are only allowed to attend the course section they are formally enrolled in according to LOCUS. This course has mostly synchronous (real-time, in-person lab experiments) work and also asynchronous (online, out of laboratory work including recorded lectures, independent videos and/or virtual online labs or activities) components. It is the student's responsibility to pay attention to all course information, including the course schedule at the end of this syllabus. As a student enrolled in the course, you agree to abide by the syllabus and complete all course aspects including rules, requirements, labs/experiments/activities, lab report, assignments, homework, quizzes, abiding by due dates, etc. This course requires your full commitment. All times listed are Central Standard Time (CST). Expect the experiments to take the full 4-hours to complete!

Synchronous sessions in FH-313: On these days of the schedule, students must come to lab to complete in person lab experiments/lab activities. Students are assigned days to come to lab and can only come to the lab section that they are formally enrolled in in LOCUS. Students cannot go to the other lab sections. No exceptions.

Asynchronous sessions (online work, not in FH-313): Days listed as this mean that assigned students do not come to the laboratory but instead complete listed lab activities for that week online during the lab period.

Academic Calendar: It is the student's responsibility to not only know the schedule for this course but also the official [University Academic Calendar](#) and important dates in the calendar.

Health, Safety, and Well-Being On Campus: Please be familiar with and adhere to all guidelines posted for [On-Campus Guidelines in Classroom Scenarios](#) and for [Campus Info & Resources](#).

Welcome to Chem 214. I look forward to having you in the course! Check Loyola email & log-in to Sakai often.
Read the entire syllabus to understand the course, expectations, and commitment needed to succeed.

Course Description:

This lab course emphasizes application of topics/theory covered in the lecture course (Chem 212). It reminds students of laboratory and chemical safety, introduces students to classical and modern methods of chemical analysis wet chemical laboratory techniques in an online environment, demonstrates use of Excel for basic statistics and experimental data analysis, and exposes students to real-world experimental data to be prepared for future use of lab techniques and instrumentation. Topics covered will include Microsoft Excel, basic statistics and data analysis, acid-base titration, pH titration curves and corresponding derivative graphs, a module on chromatography focused on High-Performance Liquid Chromatography (HPLC), Ion Chromatography (IC), and Gas Chromatography (GC), and a UV-Vis spectrophotometry module with a focus on external standards use and standard addition use to answer chemical questions about two analytes. Students will also be introduced on how to evaluate an analyte using ATR-FTIR spectroscopy. Chemical knowledge spanning from general chemistry to new topics in Chem 212 lecture is vital. This list is not exhaustive but mentions the highlights. To be successful in any course [including this one], an honest effort and time commitment on the students' part is vital. Students must choose to commit to learning course material, adequately manage time, complete course work, and ask for assistance when things are unclear.

Course Goals & Outcomes for Students:

Goals:

- 1) Teach the basics of Microsoft Excel and capabilities for data organization, graphing, data analysis, and statistics to note the importance of accuracy & precision of laboratory work
- 2) Acquaint students with common classical and modern techniques in analytical chemistry
- 3) Expose students to classical conventional data collection and instrumental data similar to what is gathered in both commercial and academic laboratories
- 4) Convey importance of interpretation and evaluation of experimental results, as well as being able to effectively report experimental results through scientific writing

Outcomes:

- Apply knowledge of Microsoft Excel capabilities to organize and analyze data through basic statistics; generate experimental graphs that are up to the standard of scientific publications
- Evaluate accuracy, precision, and validity of experimental data through applied techniques learned in MS Excel
- Demonstrate proficiency in the set-up of lab equipment and completion of experiments using classical and instrument techniques and understanding how changing instrument conditions affects analyte analysis
- Articulate experimental results in the format of scientific writing through lab reports

Teaching Assistant (TA) Role:

TAs help the Lab Coordinator facilitate learning, deliver course content, and provide help to students. TA monitors the laboratory during in-person labs, ensuring a safe and productive environment. TA will help students develop critical thinking and problem-solving skills. TA responsibilities also include holding an office hour, grading some course materials, and answering student questions via email. Dr. Binaku and TA are in constant communication and "CC" each other on email replies to students. This mitigates a student emailing both Dr. Binaku and TA with the same question; one reply is given and will be the same answer whether from Dr. Binaku or TA. Utilize both Dr. Binaku and TA for assistance. Note, Dr. Binaku has final authority in all matters relating to the course.

Email Etiquette:

When sending emails please put Chem 214, section # noted in LOCUS, and TA name in the email subject line or there will be a delay in response. Dr. Binaku teaches multiple courses and must know which course a student is in before replying to email. Weekday emails will get a response within a few hours. Emails after 8:00 pm may not be replied to until the following morning. Dr. Binaku checks email on weekends; response times are longer [up to 24-hours]. TAs also need to know Chem 214 and section # when you send emails and response times are the same as those noted above for Dr. B.

Required Materials:

1. Long-sleeve lab coat [white preferred, but any color is fine]. You must purchase this [LUC Bookstore or Amazon]. This is required in the laboratory at all times.
2. Lab goggles. Lab Coordinator will provide 1 free pair of goggles. Goggles required in the laboratory at all times.
3. Dressing appropriately for laboratory work, use of chemicals and glassware. See Footwear/Clothing section.
4. Composition style notebook (not spiral bound & no tear-out perforations). Line ruled. You must purchase this.
5. Chem 214 Lab Manual. Provided for free as a PDF in Sakai. Lab Coordinator will print 1 copy per student.
6. CamScanner app, for iPhone or Android. This is a free app that will convert a phone picture to a PDF file. It will be necessary that you take pictures of your Composition notebook pages and upload them for grading as a PDF file. You may also use a scanner machine, there are several in the Information Commons.
7. A non-erasable pen. Pencil and white out are not allowed.
8. Scientific OR graphing calculator. Suggested model: CALC TI30XA SCIENTIF/STAT FRAC. A graphing calculator is o.k. too. Cell phones are not calculators; do not use them for calculations.
9. [Sakai access](#) (free for LUC students) via the internet to review and complete course content, access resources, review grades, etc. Make sure your internet connection is stable.
10. Desktop or Laptop computer. Instrument simulation webpages may not work on tablets nor mobile devices and Sakai does not display well on them. If you do not have a desktop or laptop computer, there are plenty in the Information Commons. Also see [extended loan equipment program](#) if applicable. Lab Coordinator is not responsible for coordinating this resource for students nor responsible for loaned device.
11. [ZOOM video & web conferencing software](#) (free for LUC students).
12. Panopto (free for LUC students). One format of recorded course content is Panopto videos. You may be prompted to log in with UVID username and password to view the videos. Links to videos will be provided in Sakai and via email when necessary.
13. Microsoft 365 (free for LUC students) to write a formal lab report. Information is supplied on [how to download & access Microsoft 365 for free](#).

Mask Requirement:

Masks are optional but HIGHLY encouraged. Consider the absence policy and the fact there are *very limited* opportunities to make up an in-person lab experiment. Masks mitigate illness/spread of it. It is course policy that if during the semester the University re-institutes/reverts back to required mask wearing, we will do so immediately.

Footwear/Clothing:

Closed toe, closed heel shoes are required [no sandals, flip flops, slippers, Crocs, ballet flats, boat shoes, perforated shoes, etc.] No skin on legs, ankles, or feet can be exposed. Long pants recommended. Shorts and skirts [unless floor length] are not allowed. Bare skin on the lower extremities is a safety hazard: Be advised, concentrated acids/bases will be used in some lab experiments. *Lab coats, goggles, mask, and gloves are required and must be worn at all times. This even applies when cleaning glassware!* Lab coats must be fully buttoned to be an effective shield against chemicals. Students will be sent home if proper clothing or footwear is not worn, this counts as an absence. A safety lecture will be given the 1st week of class; this lecture is required to perform lab experiments. Students will sign a lab safety sheet acknowledging their understanding and commitment to adherence of lab safety rules/policies. If a student is absent the 1st day and misses the safety lecture, they cannot perform wet chemistry until the safety lecture is completed & safety sheet is signed. It is advised students do not wear contact lenses in the laboratory, as contact lens material may react with chemicals/ chemical vapors if they get into the eye. All rules are meant to keep students safe in the laboratory. *Lab Coordinator and TA have complete discretion to prohibit a student from completing lab work if the student has clothing/footwear exhibiting a potential safety hazard OR exhibits behavior deemed unsafe to self or students.*

Instructional Format:

- Majority of the course is synchronous but there are a few asynchronous lab sessions. The class will be split in half into Group A and Group B; while some students [Group A] are synchronously in person completing lab experiments other students [Group B] will be completing online lab activities or in person completing a

completely different lab. Then the next week they'll switch. Pedagogically, this enhances the laboratory experience as students will work independently, relying on their own lab skills to collect data and earn grades based on the accuracy of that data. There will be no partner labs as a result. This course design ensures students learn the skills first-hand in the laboratory and in the online lab activities, essential for real-world experience. Speaking from experience, when working in industry and in graduate school Dr. Binaku analyzed 100s of samples per day and could only rely on her lab skills learned. She had no lab mates or research partners. It is very important that students develop their own laboratory skills.

- Attendance in synchronous sessions in person in the laboratory is required. I understand that "life happens" so if you must be absent contact Dr. Binaku right away. Allowances may be made to let a student come to the laboratory during their "off" [asynchronous] week but this will be decided on a case by case basis. Due dates for course work are not adjusted for absences. All assigned items have specific due dates.
- Other than office hours or a scheduled appointment, the synchronous sessions are the only other "real-time" opportunity to ask questions and communicate. Emails work great, but they are not "real-time." There is a delay with an email reply. Keep that in mind.
- The asynchronous sessions are designed as time set aside for students to work on assigned items for that lab day. Instead of coming to the laboratory, on asynchronous days students will complete the items outside of lab time at any location they'd like since the work is accessible through Sakai. All assigned items have specific due dates that will not be adjusted. Do not schedule extra work hours during asynchronous sessions.
- Dr. Binaku will ask how things are going over the course of the semester. I care a lot about students, course content, and your progress! Also, the TA presence should enhance the educational experience in the course. If this is not the case, talk to Dr. Binaku at any time.

General Policies:

- Course work will be graded with an emphasis on correct significant digits, consistent results (do data & observations match conclusions), correctness of calculations, data analysis, or optimal instrument conditions for analyte applications, appropriate use of Excel functions, and thoroughness in responses. Following directions of reporting calculated answers are taken into account too.
- The Composition notebook needs to contain all laboratory experiment information [Date, Title, data/observations/calculations, and conclusion for an experiment]. Use the notebook as a resource. Feel free to take class notes in it to organize your thoughts too. The Lab Coordinator and TAs see the lab notebook pages when uploaded to Sakai as a PDF using the Cam Scanner app mentioned or scanner machine.
- Aspects of course work must be completed in the avenue/medium that they are provided in and in the time allotted [i.e. be mindful of due dates]. This means that a quiz in Test and Quizzes in Sakai can only be submitted in Sakai or a notebook entry can only be submitted in Sakai Assignments. Course work items such as homework, quizzes, lab experiment results, lab simulation results, lab report, etc. can never be submitted via email. No exceptions. Submit them in their required, respective medium and do so on time. This allows Lab Coordinator and TAs to see the submitted work in an organized location in Sakai and therefore grade items quickly.
- Be mindful that everything in the course has a due date. Generally, graded course work cannot be made up if missed. **See late work policy in the Grading section of the syllabus.**
- There is a point value associated with the work, and one cannot earn points for work not completed. Students are expected to complete all course work; no makeup work is given. Not completing work for 2 or more of the in-person lab experiments or online activities is significant and unacceptable and will result in academic failure.
- Students should not enroll in courses that they cannot fully attend. If you must be absent, contact Dr. Binaku as soon as possible. Students know the schedule all semester long and have 24/7 access to Sakai and materials.
- If a student was previously enrolled in a Chem 214 course but didn't finish it [dropped/withdraw] or didn't pass, note that any data collected for experiments in a previous Chem 214 course or course assignments are NOT valid in this semester. Students must complete all experiments & coursework in this current semester of course.

Recording Policy and Course Content Policy:

- Panopto is used to record lectures and content information for the course. This content is posted to the Sakai site. Lab Coordinator does not intend to record any of the in-person lecture notes while in laboratory. If any content is recorded by Lab Coordinator it is done outside of class time and no students are included.
- The use of all video recordings will be in keeping with the University Privacy Statement shown below: Assuring privacy among faculty and students engaged in online and face-to-face instructional activities helps promote open and robust conversations and mitigates concerns that comments made within the context of the class will be shared beyond the classroom. As such, recordings of instructional activities occurring in online or face-to-face classes may be used solely for internal class purposes by the faculty member and students registered for the course, and only during the period in which the course is offered. Recordings are not shared outside of this course. The above bullet point states when recordings will occur in this course (synchronous sessions). Recordings including student activity that have been initiated by the Lab Coordinator may be retained by the Lab Coordinator only for individual use.
- All activities pertaining to the course should be completed as an INDIVIDUAL. Any collaboration on course material and/or graded materials can constitute cheating. Failure of the course may result if an instance of copying or sharing answers to graded content is discovered by TA or Lab Coordinator.
- **Chegg, Course Hero, Reddit, among other webpages, are monitored by the Lab Coordinator.** If any Chem 214 course content is posted on these sites or other, the Dean and University will be notified. Student(s) involved may fail the content the posted material pertains too and/or fail the course. Posting any course content online to facilitate getting answers is a form of cheating and will not be tolerated. These websites readily give up student information to Universities as evidence of cheating/posting content that does not belong to the student.

Smart Evals:

Feedback on the course is important so that a Lab Coordinator can gain insight into how to improve the course, the teaching style, and so the department can learn how best to shape the curriculum for future semesters. Towards the end of the semester, students will receive an email from the Office of Institutional Effectiveness with a reminder to provide feedback on the Chem 214 course the student is enrolled in. This office will send you reminders during the open period of feedback until the evaluation has been completed. I do read the Smart Evals and thank you in advance for completing it! The evaluation is completely anonymous. When the results are released after the semester is over, no one will be able to tell which student provided the individual feedback. The feedback is not released until after the semester is over, therefore any feedback given will not impact student grades.

Blanket Statement About “technical difficulties” with Technology and/or Software:

It is *strongly encouraged* that all required submissions to Sakai as well as typing lab reports, opening course/data/experiment files, be completed on a reliable wired or wireless internet connection. WI-FI is perfectly o.k. if the connection is reliable. The internet user must determine the reliability of their WI-FI. Excuses of “technical difficulties” are generally not accepted as this syllabus is stating all students should ensure their internet connection is reliable [not prone to outages]. The Lab Coordinator realizes campus is closed and University computer labs may not be accessible. Even so, students should ensure their internet connection is reliable enough to complete an online course without interruption. If an outage arises, the Lab Coordinator does reserve the right to ask for proof. The best advice the Lab Coordinator can give is to NOT complete assignments at the last minute, so to avoid glitches with internet, since every part of the course work needs reliable internet to submit. Lab Coordinator is not responsible for technical difficulties of personal devices [phone, tablet, home/work/public wireless internet or computer]. Do not submit items in Sakai using a cell phone or a tablet device as these devices do not count as reliable internet connection tools [and the Sakai website display on these mobile devices isn't reliable]. This syllabus is stating all students should use a reliable internet to submit work in Sakai, take quizzes, type & submit lab reports, open course/data/ experiment files. Emailing lab reports, notebooks, lab results, or other is not allowed in place of the required means of turning in lab reports or required submission of items in Sakai. This list is not exhaustive and do note that any activities this course may require a computer or internet connection for should be completed using University computers with wired internet connection.

Loyola University Absence Policy for Students in Co-Curricular Activities (including ROTC):

Students participating in co-curricular activities must make information concerning time conflicts with University sponsored events available to the Laboratory Coordinator no later than 10 calendar days after the start of the semester. The Laboratory Coordinator reserves the right to contact the [Athletics Department confirming time conflicts, absence, and regarding concerns](#). Students missing classes while representing Loyola University Chicago in an official capacity (e.g. intercollegiate athletics, debate team, model government organization) will need to discuss their needs with the Laboratory Coordinator. Sakai work cannot be made up in any circumstances, no exceptions. Laboratory work generally cannot be made up, but this will be decided case by case when appropriate. If Lab Coordinator has PowerPoints for the day/content missed, they are posted to Sakai for student access 24/7. These types of absences are handled on a case-by-case basis with remedy. Students should discuss with faculty the potential consequences of missing class and the ways in which they can be remedied. Students must provide Lab Coordinator with proper documentation describing the reason for and date of the absence. This documentation must be signed by an appropriate Faculty/Staff member, and it must be provided as far in advance of the absence as possible. It is the responsibility of the student to make up any assignments under the timeline the Lab Coordinator decides upon.

Loyola University Absence/Accommodations Policy for Religious Reasons:

Students missing an in-person lab experiment due to observing religious holidays must alert the Lab Coordinator no later than 10 calendar days after the start of the semester to request a special accommodation. This is handled on a case by case basis. The Lab Coordinator reserves the right to contact Campus Ministry, which keeps information on a plethora of religions. Students must plan ahead for online lab activities; work ahead if a due date is on a religious holiday. Students must discuss with the Lab Coordinator the consequences of missing lab and the ways [if any] they can be remedied, while also providing the Lab Coordinator with proper documentation describing the reason and date of the absence. The document must be signed by an appropriate Faculty/Staff member, and it must be provided as far in advance of the absence as possible. It is a student's responsibility to proactively ask what will be missed due to absence.

Course Repeat Rule:

Effective with the Fall 2017 semester, students are allowed only THREE attempts to pass Chemistry courses with a C- or better grade. The three attempts include withdrawals (W). After the second attempt, the student must secure approval for a third attempt. Students must come to the Chemistry Department, fill out a permission to register form or print it from the Department of Chemistry & Biochemistry website: <http://www.luc.edu/chemistry/forms/> and obtain a signature from the Undergraduate Program Director, Assistant Chairperson, or Chairperson in Chemistry. A copy of this form is then taken to your Academic Advisor in Sullivan to secure final permission for the attempt.

Previous Course Work When Repeating the Course:

If you were enrolled in a Chem 214 lab course in a previous semester are re-taking it for any reason [withdraw, drop, unfavorable grade, etc.], please note that any coursework, data, etc. from a previous semester does NOT count in the current semester the course is being taken. Students must complete all coursework within the same semester of the enrolled course. Any previous data or coursework taken in prior semesters does not count in the current semester.

Pass/Fail Conversion Deadlines and Audit Policy:

A student may request to convert a course into or out of the "Pass/No-Pass" or "Audit" status only within the first two weeks of the semester. For the Spring 2023 semester, students are able to convert a class to "Pass/No-Pass" or "Audit" through Monday, January 30th. Students must submit a request for Pass/No-Pass or Audit to their Academic Advisor.

Accommodations via Student Accessibility Center (SAC) Policy:

If you have a documented disability and wish to discuss academic accommodations, [discuss with the Lab Coordinator](#) as soon as possible, ideally the first week of the semester. The Coordinator of Student Accessibility Center (SAC), formerly referred to as SSWD, is located in the Sullivan Center and must be contacted independently by you, the student. Necessary accommodations will be made for students with disabilities who procure a SAC letter. However, to receive any accommodations self-disclosure, proper documentation, and registration with the SAC office at Loyola University Chicago is required. Accommodations cannot be made until the Lab Coordinator receives proper SAC documentation. Furthermore, accommodations are not retro-active and begin only once appropriate SAC documentation has been

received by the Lab Coordinator in a timely manner. Only those accommodations that are specifically listed in the formal SAC letter will be provided. If a SAC letter suggests the Testing Center be utilized, it does not apply for this course as there are no written exams. Read up on [SAC Policies and Procedures](#).

Laboratory Procedures:

PowerPoints will serve as the basis for theory, application, instrument information, and instruction for in-person lab experiments as well as online activities. A lab manual is provided, containing information about each of the in-person lab experiments and online lab activities. Students are expected to read lab procedures *several times* before coming to lab, to comprehend and complete labs safely in the laboratory and watch any provided Panopto video information about the topics. The pre-lab lecture slides are provided in Sakai, for further information. Other media for demonstration and topics includes JoVE videos, original experiment videos, virtual simulations, etc. Other handouts will be provided as needed. All information and resources are posted in Sakai.

Lab Experiments/Activities:

All in-person lab experiments and online simulated lab experiments, activities, and/or data analysis are completed *individually* by students, emphasizing development of an individual's skillset. The experiment/activity topics are located in the lab schedule at the end of this syllabus. Each laboratory topic is approached uniquely. For the in-person lab experiments, students must be present in the laboratory to complete the experiments and collect the necessary data to satisfy the purpose of the experiment. Students will have their own "real-world" or "unknown" sample and have to process [experiment with] it, collect and analyze data, and report final results. There is no substitute for the in-person lab work. For some online lab activities there may be required protocol videos to watch. For other online activities that utilize a virtual simulator of the technique or instrument, students may have to develop a protocol, define instrument parameters for the best result of the instrument function, change instrument parameters and discuss the results, to name a few. All of this mimics instrument technique, method development, and/or other key skills needed in the real-world. This combined with the in-person lab skills learned will set students up with a fantastic foundation of laboratory and data analysis skills/knowledge. Each lab experiment/activity is completed in the order shown in the lab schedule. If the lab experiment/activity requires data analysis [calculations, etc.] students report the work VIA Sakai Assignments, their data of each individual determination (trials), mean/average concentration (or percent composition), standard deviation, and parts per thousand (ppt) associated with the overall determination. *Students are NOT permitted to repeat/redo a lab experiment/activity.* No exceptions.

If the Lab Coordinator finds a calculation error in submitted work, has to ask a student to double check their work due to invalid results, or finds an uploaded results file cannot be opened in the student's Sakai submission a 5 to 10 point **deduction** is applied to the grade. A student must submit revised work if Lab Coordinator finds a mistake/errors in the calculations/results. If a student finds a mistake in their own work and has to request to Lab Coordinator that an additional submission be granted, a 5 to 10 **deduction** is applied to the accuracy grade. Therefore, ask Lab Coordinator and TA questions before submitting results in Sakai. We offer lots of assistance when we know you need the help. All Sakai Assignments lab experiment/activity results submissions have directions for what to submit.

Laboratory Notebook:

One notebook is required. A bound Composition style is needed as pages are bound [can't be torn out]. Complete notebook pages in PEN. Detailed notebook requirements are in a document in Sakai Resources; this process requires electronic submission of notebook pages as a PDF file for grading purposes. That way students physically keep their notebooks 24/7 and will use Cam Scanner or scanner machine to digitally upload their notebook pages for grading.

All in-person lab experiments and online lab activities must have a complete notebook entry written in the lab notebook. Several notebook entries will be formally graded. Students will use the app called Cam Scanner OR a scanner machine to take pictures of the notebook pages for submission to Sakai as a PDF file. If the lab data has Excel components you do NOT have to put Excel in the physical lab notebook, but you need to show some example calculations written in the lab notebook [even if the calculation work was done via Excel]. Make a note.

Laboratory Report:

Lab reports must be computer generated [typed] and follow the format defined the documents in Sakai Resources. Formal lab reports are to be completed individually. Plagiarizing other students' reports (current or former), book or internet sources, or lab procedures will not be tolerated. You CANNOT copy course resources word for word; that is plagiarism. Cite course resources and outside sources when applicable in a Reference section in the report.

Lab report due dates are located in the laboratory schedule. Lab reports **are not** accepted via email. Reports must be submitted to the appropriate Sakai Assignment **as a Word Doc or PDF file** within the first 15 minutes of the official lab start time on the date the report is due. Reports will be checked for plagiarism via Turn It In software. One cannot show TA or Lab Coordinator a lab report on a laptop or other device; that does NOT count as turning in a lab report on time. If a student is absent on the day a lab report is due, the report must still be turned in. If a student turns in the incorrect lab report i.e. a lab report that is not the required report(s) listed no credit is given so a zero (0) is recorded and the student is offered an opportunity to turn in the correct report, but it is considered late based on the late lab report policy. **Late lab reports will receive a 4pt penalty deduction each day the report is late and result in a grade of zero (0) if not received within one week of the due date.** "Day" is defined as the 7 days of the week Monday to Sunday. Late penalty applies to all students, including absent students. This means the weekend days count as late days i.e. if a student has an item due Friday but doesn't turn it in until Monday that is technically 3 days late. If a student has an item due Wednesday but doesn't turn it in until Monday that is 5 days late.

Writing skills are important to explain results and other important information in the "real world," but the Lab Coordinator realizes completing lab reports is labor intensive. **Students will only write a lab report for one (1) of the lab experiments/activities in this course.**

The following list includes the lab experiments for which a written lab report is required:

- 1) Acid-Base Titration: KHP and NaOH. Determination of % KHP in an Unknown

To assist students in improving writing skills and address any deficiencies, the Acid-Base Titration lab report, may be revised after the first version has been graded to receive at most $\frac{1}{2}$ the lost points back. Discuss any questions or concerns about graded lab reports and revisions with the Lab Coordinator or TA before the lab report revision is due.

Laboratory Quizzes (Tests & Quizzes):

There will be a short quiz on the content for some lab experiment/activities. *A quiz can only be taken once.* Quizzes are open for a week, then close and cannot be re-opened. **Take it as an individual (no help from others as that is cheating).** **You ARE allowed to use any resources you want.** Quizzes may have questions on lab experiment/activity background information, calculations, error analysis, to name a few. **Grades for each quiz are released after all sections [001, 002, and 003] take the quiz and it closes.** If you complete a quiz early, you won't see a grade/feedback until all classmates complete it. Absent/ill students do not get extensions on quiz deadlines; one week of time is more than sufficient to complete a quiz. Typically, a quiz opens at the LOCUS end time of class and is open all week and until the next start LOCUS time for class. Due dates are posted in Sakai and the lab schedule at the end of this syllabus.

Laboratory Safety Points:

Unsafe actions in the lab are NOT tolerated. All students start with 20 safety points. either earn the points. Deductions are taken for being late or unsafe actions in the lab. A student is told when a safety infraction is witnessed by TA/Instructor and that safety points were deducted. This is documented on the sign-in sheet. **Potential safety point deductions:*** Coming late to lab, not signing the sign-in sheet when present, not wearing or needing to borrow borrowing lab goggles or a lab coat, eating/ drinking in lab, chewing gum, taking goggles off in FH-313 when chemicals/glassware are still on any of the 3 lab benches (even if not your chemicals/lab bench), taking mask off or putting mask below nose at any point in the lab, not wearing goggles during lab, touching face/cell phone/personal belongings with gloves on, leaving lab with gloves on, not cleaning up chemical spills on bench top/balances/fume hood, standing/kneeling on chairs, improper chemical disposal, not starting clean-up on time, etc. *The list is not exhaustive; if an [unlisted] action is unsafe, a student will lose safety points.

Lab Clean-up:

Students are REQUIRED to begin cleaning 10 minutes before the official end time of class listed in LOCUS. Students are not allowed to stay past lab time to do wet chemistry under any circumstances NOR can a student gain access to the laboratory room, FH-313, outside of the LOCUS scheduled class day & time.

Academic Integrity:

The standard of academic integrity and personal honesty delineated in the [College of Arts & Sciences Statement on Academic Integrity](#). Integrity is expected of every student and will be enforced. Cheating can take many forms in a lab course, but the most common forms are copying data/data analysis, answers to analysis questions, sharing files, or completing Sakai work or other electronic content with another person. The data and analysis, homework, quiz answers, etc. submitted for grading must be your own. If it is not, no credit will be awarded, and no make-up work for those points will be granted. Findings of dishonest academic behavior are reported to the Chair of the Chemistry Department and to the Dean's Office; it is also entered into an individual's record. Copied answers to course work or copied formal lab reports will result in penalty for all students involved. Turn It In is utilized for formal lab reports to identify plagiarism, cheating, and other. Students can converse, brainstorm, and work through strategies together but copying other students' (current or previously in Chem 214) work and presenting it as one's own is unacceptable. There is a difference between sharing knowledge and cheating. If lab reports, data analysis, quizzes, or other materials in this course are plagiarized or have been shared between students (current or past), no credit will be given for the work in question. Cases of suspect academic dishonesty will be handled according to University guidelines.

Grading Policy:

The University uses the +/- grading scale system and it is implemented in this course. Grades are weighted. Grade rounding only applies to the final course grade percentage. Sakai reports course grades to TWO digits past the decimal (XX.XX%); this percentage is rounded to the closest integer. For example, an 89.50% or 89.90% (B+) rounds up to a 90% (A-), BUT an 89.30% or 89.45% (B+) round to the integer 89% (B+), as it is the closest integer. There are no extra credit assignments in Chem 214 because, frankly, there is nothing of the sort in the "real world." If you do not turn in work for 2 or more lab experiments (synchronous and asynchronous), you cannot pass the course [I have to report to the Dean's Office, Wellness Center, and academic advisor the lack of coursework completion]. There is no final exam in this course.

Grading Scale* (%): *subject to change at Lab Coordinator discretion.

Course Grade %	Letter Grade
94 – 100	A
90 – 93	A-

87 – 89	B+
83 – 86	B
80 – 82	B-
77 – 79	C+
73 – 76	C
70 – 72	C-
60 – 69	D
0 – 59	F

Late Work Policies:

QUIZZES: If not completed on time, a 24-hour grace period is allotted to take the quiz past its due date [1pt penalty applied to late quiz submission]. After the 24-hour grace period, if a quiz is not taken a 0 is the final grade. Quizzes cannot be accessed after the late 24-hour grace period as answers are automatically programmed to be released then.

NOTEBOOK ENTRIES: If not completed on time, a 1-week grace period is allotted to turn the work in late [2pt penalty for lateness applied to grade]. After 1-week, if the notebook is not turned in a 0 is the final grade.

IN-LAB DATA & ANALYSIS OR ONLINE LAB ACTIVITY RESULTS: If not completed on time, a 1-week grace period is allotted to turn the work in late [5pt penalty for lateness applied to grade]. After 1-week, if not turned in a 0 is the final grade.

FORMAL LAB REPORT: If not completed on time, a 1-week grace period is allotted to turn the work in late [4pt penalty per day of lateness applied to grade]. After 1-week, if the lab report is not turned in a 0 is the final grade. Students cannot earn late points back in the 'revision' opportunity tied to the formal lab report.

SOCIAL JUSTICE FORUM/DISCUSSION POSTS: Late posting not possible. The forum is open almost all semester long. Once the forum/discussion closes it cannot be accessed.

See next two pages for itemized list of graded course work items.

Course Work Point Breakdown:

Course Activities	Origin or Sakai (Location of Submission)	Points	Weighted % of Final Grade
LAB EXPERIMENT / ONLINE LAB ACTIVITY			
WEEK 2: Penny Statistics Using Excel (online homework; data analysis) Notes: student generate stats results when completing the activity. Accuracy of the work is taken in to account for this grade.	Excel File submitted to Sakai (Assignments)	100	40%
WEEK 3: Acid-Base Titration Experiment: KHP & NaOH. %KHP Unknown (in-person lab experiment) Note: accuracy of data collected/lab results weighted in this grade.	Lab Results submitted to Sakai (Assignments)	100	
WEEKS 4 & 5: Polyprotic Acid Titration Experiment (in-person lab experiment) Note: accuracy of data collected/lab results weighted in this grade.	Lab Results submitted in Excel to Sakai (Assignments)	100	
WEEKS 4 & 5: Buffers Lab (in person lab experiment) Notes: Students prepare buffers in several ways, adjust pH of buffers, etc.	Lab Results submitted to Sakai (Assignments)	100	

WEEKS 6 & 7: EDTA Titration Analysis of Water Total Hardness; Ion Chromatography Analysis of Water Experiment (in-person lab experiment)	Lab Results submitted to Sakai (Assignments)	100	
WEEKS 8 & 9: HPLC Simulator (online lab activity; instrument parameters) Notes: Students use the Excel simulation, try various parameters to optimize separation. Document all parameters tried, how parameter changes result.	Excel or Word Doc or PDF submitted to Sakai (Assignments)	100	
WEEKS 8 & 9: UV-Vis: External Standards Iron Analysis Experiment (in person lab experiment) Note: accuracy of data collected/lab results weighted in this grade.	Lab Results in Excel submitted to Sakai (Assignments)	100	
WEEKS 10 & 12 : Gas Chromatography Simulator (online lab activity; instrument parameters) Notes: Students use web-based simulation, try various parameters to optimize separation. Document all parameters, answer analysis questions.	Word Doc or PDF submitted to Sakai (Assignments)	100	
WEEKS 10 & 12: UV-Vis: Ext. Std & Standard Addition, Food Dye (in-person lab experiment) Note: accuracy of data collected/lab results weighted in this grade.	Lab Results in Excel File submitted to Sakai (Assignments)	100	
WEEKS 13 & 14: ATR-FTIR Quantitative Analysis (in-person lab experiment) Note: accuracy of data collected/lab results weighted in this grade.	Lab Results in Excel File submitted to Sakai (Assignments)	100	
QUIZZES (Tests and Quizzes)			
Quiz on Syllabus and Safety	Sakai (Tests & Quizzes)	20	15%
Quiz on Microsoft Excel and Stats	Sakai (Tests & Quizzes)	20	
Quiz on Buffers	Sakai (Tests & Quizzes)	20	
Quiz on Titrations	Sakai (Tests & Quizzes)	20	
Quiz on UV-Vis Iron, Calibration Curves, Standard Solutions	Sakai (Tests & Quizzes)	20	
Quiz on Chromatography Methods	Sakai (Tests & Quizzes)	20	
NOTEBOOK ENTRIES (use CamScanner, submit each notebook entry as a PDF file)			
All in-person experiments and activities need a notebook entry; these labs have the entry formally graded.			
Notebook Entry for Acid-Base Titration (KHP and NaOH) Lab	Sakai (Assignments)	30	15%
Notebook Entry for Buffers Lab	Sakai (Assignments)	30	
Notebook Entry for EDTA Titration Water Analysis Lab	Sakai (Assignments)	30	
Notebook Entry for UV-Vis: Ext. Std., Iron Analysis Lab	Sakai (Assignments)	30	
SOCIAL JUSTICE			
Discussion/Forums Posting identifying Social Justice issues in the sciences (Sakai activity)	Sakai (Discussion)	30	5%
LAB REPORT (typed and submitted as Word or PDF file)			
WEEK 5: Formal Lab Report Acid-Base Titration [PDF or Word Doc]	Sakai (Assignments)	200	15%
LAB SAFETY			
Safety and lab clean-up points for in-person sessions. Deductions for unsafe action or lateness apply to this grade.	In Lab	20	10%
			100%

Lab Report and Notebook Grading Rubrics:

Lab Report	Points
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Title Page	20
Introduction/Purpose	45
Results and Data	50
Discussion	30
Conclusion	20
Grammar/Formatting/Spelling	25
Proper File Type (Word or PDF) and Location Submission (Sakai)	10
Total	200

Notebook Entries (Each notebook entry is graded with this rubric)	Points
Table of Contents (experiment/activity title & page numbers listed). This is not graded but for the experimenter's benefit to keep track of notebook entries.	N/A
Student Name, Section #, Date at the top of each notebook page. Notebook is not graded if this information is not on all scanned notebook pages for each entry.	N/A
Title of Experiment/Activity clearly defined on first page of notebook entry	2
Introduction Section	5
Results and Data Section [Raw Data and Calculations, Graphs, Tables, Etc.] Each lab experiment and/or online lab activity has different results and data processing.	13
Conclusion Section	7
Organization and Proofreading (sections clearly labeled, writing legible, sentences complete and spelling/grammar ok, etc.)	3
Total	30

Additional Student Resources:

A considerable amount of technology is utilized in this course. Here are links of information guides in the event that students need more structured guidance on using the tools in the course in order to be successful. A link to the University Help Desk is also provided for technology questions. Students can email the Lab Coordinator and TAs about various University information, but the links below may reveal the answer more quickly when a student reads them on their own. These guides are written by the pros. Use links any time additional University info is needed.

[Career Services](#)

[Coronavirus Updates from University](#)

[First and Second Year Advising](#)

[Information Technology Service Desk](#) (ITS Help Desk)

[Panopto Information](#)

[Resource Guide for Online Learning](#)

[SAKAI student guide](#)

[Success Coaching](#)

[Student Accessibility Center](#)

[Tutoring Center](#)

[Writing Center](#)

[ZOOM Information](#) and [Contacting ZOOM Support](#)

DISCLAIMER: Dr. Binaku reserves the right to revise this syllabus to correct any unintentional mistakes found at any point of the semester. Students will be notified if any changes have been made.

COPYRIGHT DISCLAIMER: All portions of the Chem 214 syllabus, course materials in Sakai (PowerPoints, all handouts (Word or PDF), rubrics, directions, lab videos) are NOT allowed for distribution outside of class nor outside of the University. Uploading, posting, copying, or sharing electronic/non-electronic Chem 214 materials outside of class [i.e. share sites] is NOT allowed. If it is discovered a student completes such action, the University will be notified immediately as that is breaking copyright law.

See the remaining pages of the syllabus for the semester lab schedule information!

SYNCHRONOUS Day (meet in-person for lab); ASYNCHRONOUS Day (don't come to lab, online work assigned)
Pay special attention to the schedule. For some weeks, BOTH groups are in person. For other weeks, one group is in person while the other group is completing asynchronous course work. This course design is to MAXIMIZE lab time, minimize instrument wait time, develop individual skills, and learn method development for instrument techniques in a timely manner.

WEEK And Class Dates	Group A Students	Group B Students
WEEK 1 Wednesday, January 18th And Thursday, January 19th	SYNCHRONOUS – IN PERSON Lecture to Watch BEFORE Class Meets: Intro & Syllabus Lecture (Panopto) Lecture Content in Class: Glassware, Equipment, & Safety Lecture, Calc Review Worksheet Lab Activity/Experiment in Class: Equipment check-in, designing data tables, calculation review sheet, Q & A. Homework Due By Next Week, WEEK 2:	SYNCHRONOUS – IN PERSON Lecture to Watch BEFORE Class Meets: Intro & Syllabus Lecture (Panopto) Lecture Content in Class: Glassware, Equipment, & Safety Lecture, Calc Review Worksheet Lab Activity/Experiment in Class: Equipment check-in, designing data tables, calculation review sheet, Q & A. Homework Due By Next Week, WEEK 2:

	<ol style="list-style-type: none"> 1. Read syllabus if you haven't yet AND explore the features of the Sakai course site. Purchase lab coat, Composition notebook, calculator. 2. Practice submitting notebook pages online, submit review sheet answers as PDF file to Sakai (Assignments) 3. Watch Intro to Lab Notebook Writing Lecture (Panopto), read related PDF documents (<i>Resources</i>) 4. Quiz on Syllabus, Course Req., Safety (Tests & Quizzes) 5. Read Lab Manual Acid-Base Titration Lab for NaOH solution prep AND read EDTA Lab for EDTA and CaCO₃ solution prep 6. Watch these 4 videos (Online Lab Activities): Lab Techniques, Common Glassware and Uses, Solutions & Concentrations, and Making Solutions in Lab 7. Come prepared for solution prep lab. 	<ol style="list-style-type: none"> 1. Read syllabus if you haven't yet AND explore the features of the Sakai course site. Purchase lab coat, Composition notebook, calculator. 2. Practice submitting notebook pages online, submit review sheet answers as PDF file to Sakai (Assignments) 3. Watch Intro to Lab Notebook Writing Lecture (Panopto), read related PDF documents (<i>Resources</i>) 4. Quiz on Syllabus, Course Req., Safety (Tests & Quizzes) 5. Read Lab Manual Acid-Base Titration Lab for NaOH solution prep AND read EDTA Lab for EDTA and CaCO₃ solution prep 6. Watch these 4 videos (Online Lab Activities): Lab Techniques, Common Glassware and Uses, Solutions & Concentrations, and Making Solutions in Lab 7. Come prepared for solution prep lab.
WEEK And Class Dates	Group A Students	Group B Students
WEEK 2	SYNCHRONOUS – IN PERSON	SYNCHRONOUS – IN PERSON
Wednesday, January 25th	Lecture Content in Class: Solution Preparation Tips	Lecture Content in Class: Solution Preparation Tips
And	Lab Activity/Experiment in Class: Complete prep and storage of 3 solutions: NaOH, EDTA, and CaCO ₃ .	Lab Activity/Experiment in Class: Complete prep and storage of 3 solutions: NaOH, EDTA, and CaCO ₃ .
Thursday, January 26th	Homework Due By Next Lab, WEEK 3: <ol style="list-style-type: none"> 1. Watch Panopto: Excel Modules (Basics, Calcs & Stats, Graphing, Etc.) & Demo 2. Read Lab Manual for Penny Statistics. Download Excel file from Sakai (<i>Online Lab Activities</i>) 3. Complete the LAB: Penny Statistics in Excel; Submit lab Excel file to Sakai (Assignments) 4. Take the quiz on Microsoft Excel in Sakai (Tests and Quizzes) 5. Watch Panopto: Acid-Base Titration: KHP and NaOH. Determine %KHP in Unknown (Panopto) 	Homework Due By Next Lab, WEEK 3: <ol style="list-style-type: none"> 1. Watch Panopto: Excel Modules (Basics, Calcs & Stats, Graphing, Etc.) & Demo 2. Read Lab Manual for Penny Statistics. Download Excel file from Sakai (<i>Online Lab Activities</i>) 3. Complete the LAB: Penny Statistics in Excel; Submit lab Excel file to Sakai (Assignments) 4. Take the quiz on Microsoft Excel in Sakai (Tests and Quizzes) 5. Watch Panopto: Acid-Base Titration: KHP and NaOH. Determine %KHP in Unknown (Panopto)

	<p>6. <i>Read</i> in Lab Manual Acid-Base Titration: KHP and NaOH. Determine %KHP in Unknown.</p> <p>7. <i>Write</i> Date, Title, Introduction sections for acid-base titration lab in notebook. Must be done before walking into lab!</p>	<p>6. <i>Read</i> in Lab Manual Acid-Base Titration: KHP and NaOH. Determine %KHP in Unknown.</p> <p>7. <i>Write</i> Date, Title, Introduction sections for acid-base titration lab in notebook. Must be done before walking into lab!</p>
<p>WEEK 3</p> <p>Wednesday, February 1st,</p> <p>And</p> <p>Thursday, February 2nd</p>	<p>SYNCHRONOUS – IN PERSON</p> <p>Lecture Content in Class: Acid-Base Titration (KHP and NaOH) Tips</p> <p>Lab Activity/Experiment in Class: Complete Lab Experiment Acid-Base Titration: KHP and NaOH. Determine %KHP in Unknown</p> <p>Homework Due By Next Lab, WEEK 4:</p> <ol style="list-style-type: none"> Complete calculations for lab data. Submit required lab results to Sakai (Assignments) Submit Completed Notebook Entry for Acid-Base Titration to Sakai (Assignments) <p>....see next page for more homework listed.</p> <ol style="list-style-type: none"> Watch Panopto: Polyprotic Acid Titration (Panopto) <i>Read</i> in Lab Manual the Polyprotic Acid Titration Lab info <i>Write</i> Date, Title, Introduction sections for polyprotic acid titration lab in notebook. Must be done before you walk into lab! 	<p>SYNCHRONOUS – IN PERSON</p> <p>Lecture Content in Class: Acid-Base Titration (KHP and NaOH) Tips</p> <p>Lab Activity/Experiment in Class: Complete Lab Experiment Acid-Base Titration: KHP and NaOH. Determine %KHP in Unknown</p> <p>Homework Due By Next Lab, WEEK 4:</p> <ol style="list-style-type: none"> Complete calculations for lab data. Submit required lab results to Sakai (Assignments) Submit Completed Notebook Entry for Acid-Base Titration to Sakai (Assignments) <p>....see next page for more homework listed.</p> <ol style="list-style-type: none"> Watch 4 videos on buffers posted in Sakai (Online Lab Activities) Watch Panopto: Buffers (Panopto) <i>Read</i> in Lab Manual the Buffer Lab <i>Write</i> Date, Title, Introduction sections for Buffer lab in lab notebook. Must be done before you walk into lab!
WEEK And Class Dates	Group A Students	Group B Students
<p>WEEK 4</p> <p>Wednesday, February 8th</p> <p>And</p> <p>Thursday, February 9th</p>	<p>SYNCHRONOUS – IN PERSON</p> <p>Lecture Content in Class: Polyprotic Acid Titration Tips</p> <p>Lab Activity/Experiment in Class: Complete Lab Experiment Polyprotic Acid Titration</p> <p>Homework Due By Next Lab, WEEK 5:</p> <ol style="list-style-type: none"> Complete lab calculations and generate 3 graphs (titration curve, 1st derivative, 2nd derivative) in Excel. Submit lab results to Sakai (Assignments) Watch 4 videos on buffers posted in Sakai (Online Lab Activities) Watch Panopto: Buffers (Panopto) 	<p>SYNCHRONOUS – IN PERSON</p> <p>Lecture Content in Class: Buffer Preparation Tips</p> <p>Lab Activity/Experiment in Class: Complete Lab Experiment on Buffers</p> <p>Homework Due By Next Lab, WEEK 5:</p> <ol style="list-style-type: none"> Submit Buffer lab results to Sakai (Assignments) Submit Completed Notebook Entry for Buffers to Sakai (Assignments) Watch Panopto: Polyprotic Acid Titration (Panopto)

	<p>4. <i>Read</i> in Lab Manual the Buffer Lab</p> <p>5. <i>Write</i> Date, Title, Introduction sections for Buffer lab in lab notebook. Must be done before walking into lab</p>	<p>4. <i>Read</i> in Lab Manual the Polyprotic Acid Titration Lab info</p> <p>5. <i>Write</i> Date, Title, Introduction sections for polyprotic acid titration lab in notebook. Must be done before walking into lab!</p>
WEEK And Class Dates	Group A Students	Group B Students
<p>WEEK 5</p> <p>Wednesday, February 15th</p> <p>And</p> <p>Thursday, February 16th</p>	<p>SYNCHRONOUS – IN PERSON</p> <p>Lecture Content in Class: Buffer Preparation Tips</p> <p>Lab Activity/Experiment in Class: Complete Lab Experiment on Buffers</p> <p>Homework Due By Next Week, WEEK 6:</p> <ol style="list-style-type: none"> 1. <i>Submit Buffer lab results to Sakai (Assignments)</i> 2. <i>Submit Completed Notebook Entry for Buffers to Sakai (Assignments)</i> 3. <i>Take the quiz on Buffers in Sakai (Tests and Quizzes)</i> 4. <i>Watch Panopto lecture: Formal Lab Reports (Panopto), also review PDF handout (Resources)</i> 5. Type a formal lab report on the Acid-Base Titration: KHP & NaOH %KHP in Unknown lab experiment 6. <i>Submit finished typed formal lab report as Word or PDF file to Sakai (Assignments)</i> 	<p>SYNCHRONOUS – IN PERSON</p> <p>Lecture Content in Class: Polyprotic Acid Titration Tips</p> <p>Lab Activity/Experiment in Class: Complete Lab Experiment Polyprotic Acid Titration</p> <p>Homework Due By Next Week, WEEK 6:</p> <ol style="list-style-type: none"> 1. Complete lab calculations and generate 3 graphs (titration curve, 1st derivative, 2nd derivative) in Excel. <i>Submit lab results to Sakai (Assignments)</i> 2. <i>Take the quiz on Buffers in Sakai (Tests and Quizzes)</i> 3. <i>Watch Panopto lecture: Formal Lab Reports (Panopto), also review PDF handout (Resources)</i> 4. Type a formal lab report on the Acid-Base Titration: KHP & NaOH %KHP in Unknown lab experiment 5. <i>Submit finished typed formal lab report as Word or PDF file to Sakai (Assignments)</i>

	<ol style="list-style-type: none"> 7. <i>Watch Panopto: EDTA Titration and Ion Chromatography (Panopto)</i> 8. <i>Read</i> in Lab Manual the EDTA Titration & Water Hardness via IC 9. <i>Write</i> Date, Title, Introduction sections for EDTA titration and IC in lab notebook. Must be done before walking into lab! 10. <i>Obtain water sample for analysis!</i> 11. Your group is doing Titrations next week. 	<ol style="list-style-type: none"> 6. <i>Watch 5 content related videos on IC posted in Sakai (Online Lab Activities)</i> 7. <i>Watch Panopto: EDTA Titration and Ion Chromatography (Panopto)</i> 8. <i>Read</i> in Lab Manual the EDTA Titration & Water Hardness via IC 9. <i>Write</i> Date, Title, Introduction sections for EDTA titration and IC in lab notebook. Must be done before walking into lab! 10. <i>Obtain water sample for analysis!</i> 11. Your group is doing IC next week and will have down time to work on titrations too. Prepare for that.
WEEK And Class Dates	Group A Students	Group B Students
<p>WEEK 6</p> <p>Wednesday, February 22nd</p> <p>And</p> <p>Thursday, February 23rd</p>	<p>SYNCHRONOUS – IN PERSON</p> <p>Lecture Content in Class: EDTA Titration, IC Analysis Tips</p> <p>Lab Activity/Experiment in Class: Complete Lab Experiment EDTA Titration of Water Sample</p> <p>Homework Due By Next Lab, WEEK 7:</p> <ol style="list-style-type: none"> 1. Work on calculations for the part of the experiment that you completed. Don't submit any data yet. 2. If titration work was not finished, it must be finished next week during down time while waiting for the IC. 3. <i>Watch 5 content related videos on IC posted in Sakai (Online Lab Activities)</i> to prepare for IC analysis. 	<p>SYNCHRONOUS – IN PERSON</p> <p>Lecture Content in Class: EDTA Titration, IC Analysis Tips</p> <p>Lab Activity/Experiment in Class: Complete Lab Experiment Ion Chromatography Analysis of Water Sample</p> <p>Homework Due By Next Lab, WEEK 7:</p> <ol style="list-style-type: none"> 1. Work on calculations for the part of the experiment that you completed. Don't submit any data yet. 2. Prepare for EDTA titrations.
<p>WEEK 7</p> <p>Wednesday, March 1st</p> <p>And</p>	<p>SYNCHRONOUS – IN PERSON</p> <p>Lab Activity/Experiment in Class: Complete Lab Experiment Ion Chromatography Analysis of Water Sample. Finish all lab work.</p> <p>Homework Due in Two Week, WEEK 8:</p>	<p>SYNCHRONOUS – IN PERSON</p> <p>Lab Activity/Experiment in Class: Complete Lab Experiment EDTA Titration of Water Sample. Finish all lab work.</p> <p>Homework Due in Two Week, WEEK 8:</p> <ol style="list-style-type: none"> 1. Next week is Spring Break!

<p>Thursday, March 2nd</p>	<ol style="list-style-type: none"> Next week is Spring Break! Complete calculations for IC total hardness and for EDTA titration total hardness. Submit required results to Sakai (Assignments) Submit Completed Notebook Entry for EDTA Titration and IC Analysis to Sakai (Assignments) Take the quiz on Titrations in Sakai (Tests and Quizzes) Reminder, your group is asynchronous next. You will be doing an online HPLC instrument simulation the week we come back from spring break. 	<ol style="list-style-type: none"> Complete calculations for EDTA titration total hardness and for IC total hardness. Submit required results to Sakai (Assignments) Submit Completed Notebook Entry for EDTA Titration and IC Analysis to Sakai (Assignments) Take the quiz on Titrations in Sakai (Tests and Quizzes) Watch Panopto: UV-VIS Iron Analysis (Panopto) Read in Lab Manual the UV-VIS Iron Analysis Write Date, Title, Introduction sections for UV-Vis iron lab in notebook. Must be done before walking into lab! Watch 4 content related videos posted in Sakai (Online Lab Activities)
<p>SPRING BREAK, NO CLASSES</p> <p>March 6 – 10th</p>	<p>Make sure Week 7 homework is being worked on, it is due next week when come back from break.</p>	<p>Make sure Week 7 homework is being worked on, it is due next week when come back from break.</p>
<p>WEEK And Class Dates</p>	<p>Group A Students</p>	<p>Group B Students</p>
<p>WEEK 8</p> <p>Wednesday, March 15th</p> <p>And</p> <p>Thursday, March 16th</p>	<p>ASYNCHRONOUS – ONLINE WORK</p> <p>Watch Panopto: HPLC Simulation (Panopto)</p> <p>Read Lab Manual info on High Performance Liquid Chromatograph (HPLC)</p> <p>Homework Due by Next Week, WEEK 9:</p> <ol style="list-style-type: none"> Download HPLC simulator Excel file in Sakai (Online Lab Activities) Complete entire HPLC simulator activity. Follow manual directions. Submit Word Doc with all HPLC results to Sakai (Assignments) 	<p>SYNCHRONOUS – IN PERSON</p> <p>Lecture Content in Class:</p> <p>UV-Vis Iron Analysis, External Standards Tips</p> <p>Lab Activity/Experiment in Class:</p> <p>Complete Lab Experiment UV-Vis Iron Analysis via External Standards</p> <p>Homework Due by Next Week, WEEK 9:</p> <ol style="list-style-type: none"> Complete UV-Vis Iron lab calculations and calibration curve in Excel. Submit Excel file results to Sakai (Assignments) Submit Completed Notebook Entry for UV-Vis iron lab to Sakai (Assignments)

	<ol style="list-style-type: none"> 3. <i>Watch Panopto: UV-VIS Iron Analysis (Panopto)</i> 4. <i>Read</i> in Lab Manual the UV-VIS Iron Analysis 5. <i>Write</i> Date, Title, Introduction sections for UV-Vis iron lab in notebook. Must be done before walking into lab! 6. <i>Watch 4 content related videos posted in Sakai (Online Lab Activities)</i> 	<ol style="list-style-type: none"> 3. Reminder, your group is asynchronous next week. You will be doing an online HPLC instrument simulation.
WEEK And Class Dates	Group A Students	Group B Students
WEEK 9 Wednesday, March 22nd And Thursday, March 23rd	<p>SYNCHRONOUS – IN PERSON</p> <p>Lecture Content in Class: UV-Vis Iron Analysis, External Standards Tips</p> <p>Lab Activity/Experiment in Class: Complete Lab Experiment UV-Vis Iron Analysis via External Standards</p> <p>Homework Due by Next Week, WEEK 10:</p> <ol style="list-style-type: none"> 1. <i>Complete UV-Vis Iron lab calculations and calibration curve in Excel. Submit Excel file results to Sakai (Assignments)</i> 2. <i>Submit Completed Notebook Entry for UV-Vis iron lab to Sakai (Assignments)</i> 3. Reminder, your group is asynchronous next week. You will be doing an online GC instrument simulation. 	<p>ASYNCHRONOUS – ONLINE WORK</p> <p><i>Watch Panopto: HPLC Simulation (Panopto)</i> <i>Read</i> Lab Manual info on High Performance Liquid Chromatograph (HPLC)</p> <p>Homework Due by Next Week, WEEK 10:</p> <ol style="list-style-type: none"> 1. Download HPLC simulator Excel file in Sakai (<i>Online Lab Activities</i>) 2. Complete entire HPLC simulator activity. Follow manual directions. <i>Submit Word Doc with all HPLC results to Sakai (Assignments)</i> 3. <i>Watch Panopto: UV-VIS Artificial Dye (Panopto)</i> 4. <i>Watch 2 content related videos posted in Sakai (Online Lab Activities)</i> 5. <i>Read</i> in Lab Manual the UV-VIS Artificial Dye info 6. <i>Write</i> Date, Title, Introduction sections for UV-Vis Artificial Dye in notebook. Must be done before walking into lab!
WEEK 10 Wednesday, March 29th And	<p>ASYNCHRONOUS – ONLINE WORK</p> <p><i>Watch Panopto: Gas Chromatography (GC)</i></p> <p><i>Watch 5 content related videos posted in Sakai (Online Lab Activities)</i></p>	<p>SYNCHRONOUS – IN PERSON</p> <p>Lecture Content in Class: UV-Vis % Tartrazine, External Standards and Standard Addition Lab Tips</p> <p>Lab Activity/Experiment in Class:</p>

<p>Thursday, March 30th</p>	<p>Read Lab Manual directions on GC online activity. Register for web-based simulation to gain access.</p> <p>Homework Due By Next Week, WEEK 11:</p> <ol style="list-style-type: none"> 1. Complete GC simulator activity. Follow all directions and answer all questions. <i>Submit Word Doc with info of all results and answers to Sakai (Assignments)</i> 2. <i>Watch Panopto: UV-VIS Artificial Dye Analysis</i> 3. <i>Watch 2 content related videos posted in Sakai (Online Lab Activities)</i> 4. <i>Read</i> in Lab Manual the UV-VIS Artificial Dye Analysis info 5. <i>Write</i> Date, Title, Introduction sections for UV-Vis Artificial Dye in notebook. Must be done before walking into lab! 	<p>Complete Lab Experiment UV-Vis % Tartrazine Analysis via External Standards and Standard Addition</p> <p>Homework Due by Next Week, WEEK 11:</p> <ol style="list-style-type: none"> 1. <i>Complete UV-Vis Tartrazine lab calculations and both calibration curves in Excel. Submit Excel file results to Sakai (Assignments)</i> 2. Reminder, your group is asynchronous next. You will be doing an online GC instrument simulation.
<p>WEEK And Class Dates</p>	<p>Group A Students</p>	<p>Group B Students</p>
<p>WEEK 11</p> <p>Wednesday, April 5th</p> <p>And</p> <p>Thursday, April 6th</p>	<p>WEDNESDAY: You do not have Quant Lab but your other classes meet! We are not having lab to keep in line with Thursday sections.</p> <p>THURSDAY: Easter Break starts. No Lab!</p>	<p>WEDNESDAY: You do not have Quant Lab but your other classes meet! We are not having lab to keep in line with Thursday sections.</p> <p>THURSDAY: Easter Break starts. No Lab!</p>
<p>WEEK 12</p> <p>Wednesday, April 12th</p> <p>And</p> <p>Thursday, April 13th</p>	<p>SYNCHRONOUS – IN PERSON</p> <p>Lecture Content in Class: UV-Vis % Tartrazine, External Standards and Standard Addition Lab Tips</p> <p>Lab Activity/Experiment in Class: Complete Lab Experiment UV-Vis % Tartrazine Analysis via External Standards and Standard Addition</p> <p>Homework Due by Next Lab, WEEK 13:</p> <ol style="list-style-type: none"> 1. <i>Complete UV-Vis Tartrazine lab calculations and both calibration curves in Excel. Submit Excel file results to Sakai (Assignments)</i> 2. <i>Quiz on Chromatography Methods in Sakai (Tests & Quizzes)</i> 3. If you've had perfect attendance, you do not have lab next week. 	<p>ASYNCHRONOUS – ONLINE WORK</p> <p><i>Watch Panopto: Gas Chromatography (GC)</i></p> <p><i>Watch 5 content related videos posted in Sakai (Online Lab Activities)</i></p> <p>Read Lab Manual directions on GC online activity. Register for web-based simulation to gain access.</p> <p>Homework Due By Next Lab, WEEK 13:</p> <ol style="list-style-type: none"> 1. Complete GC simulator activity. Follow all directions and answer all questions. <i>Submit Word Doc with info of all results and answers to Sakai (Assignments)</i> 2. <i>Quiz on Chromatography Methods in Sakai (Tests & Quizzes)</i> 3. <i>Watch Panopto: ATR-FTIR Quantitative Analysis (Panopto)</i>

	4. Students needing make up a lab experiment, ATTEND NEXT LAB.	4. <i>Watch 5 content related videos posted in Sakai (Online Lab Activities)</i> 5. <i>Read</i> in Lab Manual the ATR-FTIR Analysis info 6. <i>Write</i> Date, Title, Introduction sections for ATR-FTIR Quantification in lab notebook. Must be done before walking into lab!
WEEK And Class Dates	Group A Students	Group B Students
WEEK 13 Wednesday, April 19 th And Thursday, April 20 th	MAKE UP LAB DAY If behind due to absence, you MUST attend lab to complete any remaining experiment(s). If you don't come to do your makeup lab, you earn a 0 for that lab experiment. Students with perfect attendance, no lab today. You Group's last experiment is next week! Anyone absent next week gets a 0 for the last lab, there is no makeup time. Homework Due by Next Week, WEEK 14 (this homework will NOT be accepted late): 1. <i>Quiz on UV-Vis, Calibration Curves, Standard Solutions in Sakai (Tests & Quizzes)</i> 2. <i>Watch Panopto: ATR-FTIR Quantitative Analysis (Panopto)</i> 3. <i>Watch 5 content related videos posted in Sakai (Online Lab Activities)</i> 4. <i>Read</i> in Lab Manual the ATR-FTIR Analysis info 5. <i>Write</i> Date, Title, Introduction sections for ATR-FTIR Quantification in lab notebook. Must be done before walking into lab!	SYNCHRONOUS – IN PERSON Lecture Content in Class: ATR-FTIR Quantification of Eugenol Tips Lab Activity/Experiment in Class: Complete Lab Experiment ATR-FTIR Quantification of Eugenol AND Checkout of lab locker / clean glassware Homework Due By Next Week, WEEK 14 (this homework will NOT be accepted late): 1. <i>Quiz on UV-Vis, Calibration Curves, Standard Solutions in Sakai (Tests & Quizzes)</i> 2. <i>Complete ATR-FTIR calculations and calibration curve in Excel. Submit Excel file results to Sakai (Assignments) ASAP</i> 3. <i>Make 2nd post in social justice forum in Sakai (Discussions) OR both posts if you haven't done any yet.</i> 4. <i>Check grades in Sakai (Gradebook). Contact Dr. B with any question/issue.</i> 5. You are officially done with Quant Lab and do not have to attend next week if you had perfect attendance 😊
WEEK 14 Wednesday, April 26 th	SYNCHRONOUS – IN PERSON Lecture Content in Class: ATR-FTIR Quantification of Eugenol Tips Lab Activity/Experiment in Class:	MAKE UP LAB DAY If behind due to absence, you MUST attend lab to complete any remaining experiment(s). If you don't come to do your makeup lab, you earn a 0 for that lab experiment.

<p>And Thursday, April 27th</p>	<p>Complete Lab Experiment ATR-FTIR Quantification of Eugenol AND Checkout of lab locker / clean glassware Anyone absent today gets a 0 for the experiment. No exception</p> <p>Work Due By End of Lab Period TODAY:</p> <ol style="list-style-type: none"> 1. Complete ATR-FTIR lab calculations and calibration curve in Excel. Submit Excel file results to Sakai (<i>Assignments</i>) 2. Make 2nd post in social justice forum in Sakai (<i>Discussions</i>) OR both posts if you haven't done any yet. 3. Check grades in Sakai (Gradebook). Ask Dr. B any question/issue. 4. You are officially done with Quant Lab! <p>All coursework must be submitted at this point, no late work accepted.</p> <p>Any grade or grading questions must be resolved by 9pm tonight (in lab OR email Dr. B with all questions or concerns)!</p> <p>There are no more lab makeup opportunities after today.</p>	<p>Students with perfect attendance, no lab today as you are DONE! All coursework must be submitted at this point, no late work accepted.</p> <p>Any grade or grading questions must be resolved by 9pm tonight (in lab OR email Dr. B with all questions or concerns!</p> <p>There are no more lab makeup opportunities after today.</p>
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SEE THE CALENDAR MAP on NEXT FEW PAGES. The only difference is this just lists the topics/labs so you can see the spread of everything we are doing all term on a calendar format.

Remember, students can ONLY attend the section that they are enrolled. Following days and times of each section:

Chem 214-001, Wednesdays 8:20am – 12:120pm

Chem 214-002, Thursdays 1 – 5pm

Chem 214-003, Thursdays 5:30 – 9:30pm

Month	Monday	Tuesday	Wednesday	Thursday	Friday
January 2023	16 MLK JR DAY, NO CLASSES	17 Semester Starts	18 WEEK 1 All Students: Intro/Safety/Glassware Practice Worksheet and CamScanner upload	19 WEEK 1 All Students: Intro/Safety/Glassware Practice Worksheet and CamScanner upload	20
	23	24	25 WEEK 2 All Students: Solution Preparation Lab Work Penny Statistics Lab for homework	26 WEEK 2 All Students: Solution Preparation Lab Work Penny Statistics Lab for homework	27
	30	31	1 WEEK 3 All Students: Acid-Base Titration Lab	2 WEEK 3 All Students: Acid-Base Titration Lab	3
February 2023	6	7	8 WEEK 4 All Students present Group A: Polyprotic Titration Lab Group B: Buffers Lab	9 WEEK 4 All Students present Group A: Polyprotic Titration Lab Group B: Buffers Lab	10
	13	14	15 WEEK 5 All Students present: Group A: Buffers Lab Group B: Polyprotic Titration Lab All Students: Formal Lab Report for Homework, due next week.	16 WEEK 5 All Students present: Group A: Buffers Lab Group B: Polyprotic Titration Lab All Students: Formal Lab Report for Homework, due next week.	17
	20	21	22 WEEK 6 All Students: Water Lab Group A: EDTA Titration Group B: IC Analysis	23 WEEK 6 All Students: Water Lab Group A: EDTA Titration Group B: IC Analysis	24

Month	Monday	Tuesday	Wednesday	Thursday	Friday
	27	28	See next page for March schedule	See next page for March schedule	
March 2023			1 WEEK 7 All Students: Water Lab Group A: IC Analysis Group B: EDTA Titration	2 WEEK 7 All Students: Water Lab Group A: IC Analysis Group B: EDTA Titration	3
	6 Spring Break, No Classes	7 Spring Break, No Classes	8 Spring Break, No Classes	9 Spring Break, No Classes	10 Spring Break, No Classes
	13	14	15 WEEK 8 Group A: HPLC Simulator async Group B: UV-VIS Iron Lab	16 WEEK 8 Group A: HPLC Simulator async Group B: UV-VIS Iron Lab	17
	20	21	22 WEEK 9 Group A: UV-VIS Iron Lab Group B: HPLC Simulator async	23 WEEK 9 Group A: UV-VIS Iron Lab Group B: HPLC Simulator async	24
	27	28	29 WEEK 10 Group A: GC Simulator async Group B: UV-VIS Artificial Dye Lab	30 WEEK 10 Group A: GC Simulator async Group B: UV-VIS Artificial Dye Lab	31
April 2023	3	4	5 WEEK 11 No Quant Lab today, other classes do meet.	6 WEEK 11 Easter Break NO CLASSES	7 Good Friday Easter Break NO CLASSES
	10 Easter Break NO CLASSES	11 Classes Resume	12 WEEK 12 Group A: UV-VIS Artificial Dye Lab Group B: GC Simulator async	13 WEEK 12 Group A: UV-VIS Artificial Dye Lab Group B: GC Simulator async	14
	17	18	19 WEEK 13 Group A: Make Up Day (if applicable) otherwise no class for your group! Finish SJ posts! Group B: ATR-FTIR Lab, locker clean/check out	20 WEEK 13 Group A: Make Up Day (if applicable) otherwise no class for your group! Finish SJ posts! Group B: ATR-FTIR Lab, locker clean/check out	21

Month	Monday	Tuesday	Wednesday	Thursday	Friday
	24	25	26 WEEK 14 Group A: ATR-FTIR Lab, locker clean/check out. Group B: Make Up Day (if applicable) otherwise no class for group! Finish SJ posts!	27 WEEK 14 Group A: ATR-FTIR Lab, locker clean/check out. Group B: Make Up Day (if applicable) otherwise no class for group! Finish SJ posts!	28