# Chemistry 161, Chem Structure & Properties Lab
# Summer 2024 Syllabus

Summer Semester: May 20th – June 28th, 2024

1-credit hour lab course

* This is a common syllabus for Chem 161-001 and 161-002. Policies and procedures are the same for all classes, but there are different lab coordinators. Read the entire syllabus. *

Welcome to Chem 161. We look forward to having you in the course!

**Lab Location:** Flanner Hall 305-308

**Prerequisite:** Math Placement Test or Math 117

## LAB COORDINATORS

Agnes Pecak, M.S.
Office Hours: Tuesdays and Thursdays 11:20-11:50 am in person and by scheduled appointment
Office Location: Room 428 Flanner Hall | Office Phone: 773-508-2883
Email: aorlof@luc.edu

Murat Kahveci, Ph.D.
Office Hours: Tuesdays 11:15 am-12:15 pm in person and by scheduled appointment
Office Location: Room 403 Flanner Hall | Office Phone: 773-508-3764
Email: mkahveci@luc.edu

## TEACHING ASSISTANTS

Teaching Assistants (TA) will be assisting the laboratory coordinator during this course and will also hold an office hour for assisting students. TA information is listed in Sakai → Syllabus.

In each lab session, your primary interaction could be with a Teaching Assistant (TA). The function of a TA is to help you safely get good data and provide individual help when necessary. TAs will not do the course work for you. The role of the Laboratory Coordinator is more behind the scenes: plan the curriculum, prepare handouts & PowerPoints, and train TAs so the lab experience is educational, fair, and effectively run for students. The Laboratory Coordinator will be in lab too, but may step outside of the lab from time to time to handle appropriate curriculum work. Utilize both the Lab Coordinator and TA for help. The Laboratory Coordinator is available during and outside of lab hours if there are any questions/concerns that TAs cannot handle. The Laboratory Coordinator has final authority in all course related matters.

TA responsibilities include but are not limited to holding an office hour, grading, and answering student questions. Lab Coordinator and TA are in constant communication and "CC" each other

on email replies to students. This mitigates a student emailing both the Lab Coordinator and TA with the same questions; one reply is given and is the same answer whether from Lab Coordinator or TA. TAs help students develop critical thinking and problem-solving skills. Students can always email the Lab Coordinator; TA can help answer questions too and can be emailed as well. *If at any point you want to talk to the Lab Coordinator regarding the TA, please do. TA should enhance the educational experience. If this is not the case, talk to a Lab Coordinator so they know.

## COURSE DESCRIPTION

This lab course emphasizes introductory application of some topics/theory covered in the lecture course (Chem 160). It introduces students to basic chemical laboratory skills & techniques including lab & chemical safety, glassware & lab equipment, significant figures, basic statistics, writing a formal lab report, graphing data, accuracy & precision, atomic structure, periodic table trends, solution preparation, stoichiometry, titration, pH measurements, acid/base indicators, and spectrophotometry. This list is not exhaustive but mentions the highlights.

Goals of course:

1) Learn laboratory safety and chemical safety.
2) Learn basic laboratory skills including glassware and equipment for experiments.
3) Connect lecture theory topics to practical laboratory experiences.
4) Introduce scientific writing via a formal lab report and lab notebooks.

Outcomes:

1) Students will demonstrate safe lab practices and knowledge of chemical safety.
2) Students will identify & use appropriate glassware for experiment measurements.
3) Students compute calculations and analysis questions coupled to each lab experiment.
4) Students demonstrate proper documentation of lab experiments in lab notebooks and explain laboratory results in formal lab reports.

## REQUIRED ITEMS

***1)*** Chem Laboratory Manual Packet (provided for free as PDF in Sakai). Printed manuals can be used in the lab. So, do print out a personal copy of the manual if you prefer so. Alternatively you may use your personal device to access and read the PDF version of the lab manuals on Sakai. Printed copies will not be provided to students.

***2)*** Chem Labster Lab Manual (provided as a PDF). Simulations are done online, so this manual is not printed. Print a personal copy if you want to. Printed copies will not be provided to students. This manual is optional but encouraged to review before the sims.

***3)*** Labster – web-based virtual lab experiment simulations to learn some lab techniques. These are homework and do NOT substitute for in-person laboratory work. FREE Access to Labster is provided in Sakai for students!

***4)*** Composition style notebook (not spiral bound & cannot have tear-out perforations). Line ruled. Students must purchase the Composition style notebook.

***5)*** A non-erasable pen is required for all written work. No white-out is allowed. No pencils allowed. Students must purchase the non-erasable pen.

6) Safety goggles (we provide to you for free on day #1). These must be type G, H or K goggles and must meet or exceed ANSI Z87.1 requirements. Safety glasses do not meet our requirements and are not allowed.
7) Long-sleeve Laboratory Coat (white is preferred coat color). Students must purchase.
8) **Appropriate clothing and footwear. See details in APPROPRIATE LAB ATTIRE SECTIONS***
9) Scientific calculator (non-programmable, non-graphing, and independent of another device such as a phone or tablet). Suggested model: CALC TI30XA SCIENTIF/STAT FRAC. Cell phones are not calculators. Students must purchase a scientific calculator.
10) Sakai access via the internet to review/complete course content [watch Panoptos, complete simulation work, take quizzes, upload notebook pages, and other], view resources, review grades, and complete all Sakai assigned course work.
11) Desktop or Laptop computer with internet access. Labster does NOT work on tablets nor mobile devices; Sakai does not display well on those devices. If you do not have a computer, the Information Commons (IC) on campus has plenty of available computer stations to do work at. You may also read about the extended loan equipment program within the first week of class to arrange a resource. Lab Coordinator is not responsible for coordinating resources for students nor responsible for a loaned device. Many coursework items require a computer to access and complete them.
12) Microsoft 365 (free for LUC students) to write a formal lab report. Information is supplied on how to download & access Microsoft 365 for free.
13) Panopto (free for LUC students). One format of recorded course content is Panopto video. You may be prompted to log in with UVID info to view videos. Links to videos will be provided in Sakai (Panopto tool) and via email.
14) Cam Scanner app, Notes app, OR a scanner machine. Cam scanner is a free app that converts phone pictures to a PDF file. You must take pictures of the Composition lab notebook pages and convert them to a PDF file to submit notebook pages to Sakai for grading. Cam Scanner works on Android and iPhone. A scanner machine can be used.
15) Periodic table. Here is a cool one provided by the Museum of Science & Industry.
16) (optional) A face mask. See Summer 2024 Masking Requirement below.

## COURSE MEETING TIMES AND ATTENDENCE

This course consists of a mixture of in person laboratories and asynchronous assignments that will be completed outside the lab. The in-person laboratories are 100% in-person and mandatory. There are no online substitutions for in-person laboratory work. **There are limited opportunities to make up missed labs!**

You are required to come to class on your assigned in-person days and can only attend the lab section in which you are officially enrolled in LOCUS. There is a point value associated with the work accomplished in each class, and you cannot earn points for classes that you do not attend. A student may attend class during the asynchronous week to complete the make up in most instances.

If the university is open, you are expected to attend class and be on time. Points are deducted for those who arrive late. If you arrive after the conclusion of the pre-lab lecture, you may not be

allowed to perform the lab. Being sent home for improper clothing/footwear also counts as an absence and no makeup work is allowed.

Any days' activities listed as asynchronous are off-campus sessions designed as time set aside for the student to learn content in Panopto lectures, videos, and lab simulations or other in place of meeting in person. All course work has specific due dates that will not be adjusted.

Labster gives students practice for some laboratory protocols [before coming to lab to complete a similar technique] and the ability to experience a variety of experiments in a virtual space. All course work is one attempt only, except for the Labsters which are unlimited attempts. Labsters can be completed an unlimited number of attempts to earn the 'best' grade; Labster are NOT a replacement for in-person laboratory experiments. They are a teaching tool to enhance learning.

Review the schedule at the end of the syllabus and consider the negative impact that missing a hands-on laboratory session will have on your educational experience. Students should not enroll in this lab course if they cannot fully attend 100% on the days and times listed in LOCUS. Missing 2 of the in-person lab experiments, which is nearly 33% of the lab work, is significant and unacceptable and will result in academic failure. Course failure also results if the typed formal lab report is not turned in.

There are seven lab experiments and students are expected to complete all of them. If a student is absent for both the lab and make up lab, a zero (0) is recorded in the gradebook for the experimental work missed. Sample data is given so the student can complete the homework questions, such as a quiz, pertaining to the lab missed.

If absence is due to a claim of contracting COVID-19 or any other illness, the lab coordinator will ask to see proof of a positive test and/or doctor's visit, or other documentation. IF any makeup time is offered for missing an experiment, it is done on the lab coordinator's terms and lab coordinator's schedule/availability.

It is the student's responsibility to pay attention to all information regarding the course, including the course schedule which is at the end of this syllabus. As a student enrolled in the course, you agree to be 100% committed and follow and complete all course aspects including requirements, experiments, lab report & peer review, assignments, homework, quizzes/exams, abide by due dates, rules, etc. set forth in this syllabus and displayed in Sakai. This course requires your full commitment so make sure you can commit 1-3 hours per week to complete the course homework activities outside of the scheduled lab time. All times listed are Central Standard Time (CST); all due dates are in CST.

**Academic Calendar:** It is the student's responsibility to know the schedule for this course and also the official University Academic Calendar of important dates.

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

Students missing classes while representing Loyola University Chicago in an official capacity (e.g. intercollegiate athletics, debate team, model government organization) shall be allowed by the faculty member of record to make up any assignments and to receive notes or other written information distributed in the missed classes. Students should discuss with faculty the potential consequences of missing lectures and the ways in which they can be remedied. Students must provide their instructors with proper documentation (develop standard form on web) describing the reason for and date of the absence. This documentation must be signed by an appropriate faculty or 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. Policy for athlete attendance. Students participating in co-curricular activities must make information concerning time conflicts with University sponsored events available to the Laboratory Coordinator within the first week of the course. The Laboratory Coordinator reserves the right to contact the Athletics Department confirming time conflicts 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 cannot be made up either; you cannot attend another lab section. These types of absences are handled on a case-by-case basis with remedy.

**Accommodations for religious reasons:**
Students missing a lab experiment due to observing religious holidays must alert the Lab Coordinator no later than the first week after the start of the course 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 and holidays.

Students must discuss with the Lab Coordinator the consequences of missing laboratory and the ways [if any] they can be remedied, while also providing the Laboratory 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.

## EMAIL AND ZOOM ETTIQUITE

When sending emails please put Chem course # in the subject line or there will be a delay in response time. Lab Coordinator and TA must know which course a student is in before replying to email. Weekday emails will get a response within 24-48 hours. Emails after 6pm may not be replied to until the next morning at 8am. Lab Coordinators may check email on weekends; but understand response time may be 24-48 hours. Requests to ZOOM on any evenings or on the weekends will not be granted.

## SUMMER 2024 MASKING REQUIREMENT

For more information on the current mask policy, please see the University's Health, Safety Website. A mask may be required depending on the preference of the lab coordinator and you may choose to wear one at your own discretion based on your comfort level.

## APPROPRIATE LABORATORY ATTIRE

Appropriate clothing must be worn that minimizes potential chemical contact with your skin. Shoes that adequately cover the entire foot are required. Sandals, open-toe shoes, perforated shoes, open-backed shoes are not acceptable. No skin can be exposed on your feet or legs. Clothing that covers and protects the body from the waist down (including your ankles) must be worn [no shorts, short skirts, kilts, skorts, or any other clothing that does not cover the entire lower and upper torso, etc.]. Lab coat required, which covers the midsection and upper body so short sleeves, tank tops is OK.

## GENERAL POLICIES

- Attendance for in-person labs is mandatory. All in lab work, written & Sakai work, as well as TA observations, serves as the basis for earning points and showing progress. Written work will be graded with an emphasis on correct significant digits, consistent results (do data & observations match conclusions), appropriateness/correctness of analysis, and thoroughness in responses. Following directions of reporting calculated answers are taken into account in grades too.
- Acting in a safe manner, wearing proper clothing and PPE, respecting chemicals, glassware, and equipment is required. Watching assigned Panopto videos BEFORE coming to lab is essential for knowledge of the experiments. Knowledge = safety. If Panopto experiment videos are not watched at least to 90% completion [do not fast forward as I will know], student will not be allowed to complete an experiment and that is a 0. Unpreparedness can lead to endangering oneself or others in the laboratory.
- All hand-written course work must be completed in a non-erasable pen. Work not completed in pen or containing "white-out" is subject to point deduction(s) and is not eligible for any regrade requests.
- The Composition notebook must contain all lab experiment information [name, date, title, introduction, safety, data/observations/calculations, and conclusions]. This is the major component of your course grade. Losing this Composition notebook may result in failure of the course, as one cannot be graded on work that does not exist if the notebook is lost. Follow the guidelines given on how to appropriately set-up a laboratory notebook.
- Aspects of lab work must be done in the Composition notebook only. (No loose-leaf paper or other notebooks). Your TA will evaluate/grade your notebook. This functions as a way for TAs to grade along the way and to make sure you are on the right track with lab results. If there are any discrepancies in recorded grades, proof of having earned a specific grade on a particular lab is the presence of that graded work in your notebook.
- Each student is assigned a drawer with glassware and equipment. At the beginning & end of the course, the drawer contents are checked for completeness. The drawer is shared with other students over the course of a week. Therefore, it is essential that you clean the equipment used after an experiment is done. Drawers may be checked sporadically. If glassware is broken, the student is responsible for requesting a replacement item; there is no penalty for broken glassware.
- Homework can never be submitted via email. No exceptions. Sakai is the only avenue.
- In general, Sakai work cannot be made up. Late work is not accepted for quizzes. Late lab notebooks, lab reports, and Labsters may be accepted (**See Late Policies section**).
- Safety and Clean-up points will be earned on the basis of safe/professional conduct in the lab. A safe lab environment is essential. Unsafe actions will result in grade degradation.

- The following is a partial list of ways you can lose safety/clean-up points:
  - Coming late to class, after the pre-lab lecture has started, will result in deduction of safety points.
  - Not having the lab notebook requirements prepared *before* walking into lab (name, date, experiment title, introduction, purpose, safety).
  - Not dressing appropriately for lab. Proper footwear/clothing are required.
  - Not bringing goggles to lab/not wearing your goggles consistently in lab can result in expulsion from the lab. Safety glasses do not meet our safety requirements.
  - Not properly wearing a face mask (when applicable).
  - Not bringing lab coat to lab. Not wearing lab coat properly [buttoned] during lab.
  - Not keeping equipment drawer or lab space in good condition (i.e. dirty glassware/bench).
  - Engaging in horseplay/actions that may endanger you, your classmates, TA, or the Lab Coordinator.
  - Not adhering to the Disposal Instructions indicated in each lab handout.
  - The lab-pro equipment used is breakable and requires special care. You and your partner will be assigned a box to use, and if the equipment is found to have been handled negligently, points will be deducted from both your safety points and your lab score for the both of you.
  - If you are not wearing proper clothing or footwear, you will be asked to leave the laboratory and a make-up lab time may NOT be offered, as the syllabus and welcome emails specifically state the clothing/shoe requirements. Be aware!

*An action, even if not herein, that is deemed unsafe by TA or Lab Coordinator will result in safety point deductions.
***Failure to adhere to lab safety rules can result in expulsion from lab session and/or course with no opportunity for make-up work. Safety is taken seriously.**

**COURSE REPEAT RULE**
Effective as of 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: https://luc.edu/chemistry/forms/ and personally meet and obtain a signature from either 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.

**TUTORING**
The Tutoring Center offers free tutoring. Visit the Tutoring Center Page.

**GRADING**
Reference the grading scale below. There will be no change in the grading scale nor the number of points allotted in this course. It is in your benefit to attend all in person lab experiments to know the content for homework, quiz, and/or lab report. Students cannot earn points for experiments and course work they did not complete! There are weighted grades in the course. A

zero (0) is earned for work not completed. If you do not bring your lab notebook to lab, points will be deducted.

The University uses the +/- grading scale system and that system is implemented in this course. Rounding only applies to the final course grade percentage. Sakai reports course grades to TWO digits past the decimal (XX.XX%); this final course grade 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+).

Grades are posted on Sakai within one week of completing the work [Excel homework, notebook entries, Sakai pre/post work, formal lab reports]. Labster grades are reported instantaneously. Discrepancies in Sakai [grade incorrect, for example] must be resolved no later than 1 week after reviewing the graded assignment. A student must show proof the work was graded wrong or in the gradebook incorrectly. Grade disputes will not be entertained past 1-week of the graded work being returned to students nor be acknowledged after the last day of class. Be mindful of this policy. See the next few pages for the course grading scale and a table of all listed graded work.

**Grading Scale:**

| % total | Grade |
|---|---|
| 94 – 100 | A |
| 90 – 93 | A- |
| 87 – 89 | B+ |
| 84 – 86 | B |
| 80 – 83 | B- |
| 77 – 79 | C+ |
| 74 – 76 | C |
| 70 – 73 | C- |
| 65 – 69 | D+ |
| 60 – 64 | D |
| 0 – 59 | F |

**Point Breakdown:**

| Activity | Origin | Points | % of Final Grade |
|---|---|---|---|
| Laboratory Safety virtual lab simulation | Labster | 100 | **10%** |
| Chemistry Safety virtual lab simulation | Labster | 100 | |
| Solution Preparation: From Salt to Solution virtual lab simulation | Labster | 100 | |
| Titration: Neutralize Acid Lake Contamination virtual lab simulation | Labster | 100 | |
| Pipetting: Master the Technique virtual lab simulation | Labster | 100 | |
| Spectrophotometers: Building and Exploring the Instrument virtual lab simulation | Labster | 100 | |
| **Total Labster Points** | Labster | **600** | |
| **Activity** | **Origin** | **Points** | **% of Final Grade** |
| | | | |
| Notebook Pages or Data Sheet – Beanium | In Lab/Sakai (Assignments) | 20 | **45%** |
| Notebook Pages – Volume Measurements | In Lab/Sakai (Assignments) | 25 | |
| Notebook Pages – Determination of Calcium concentration in Loyola Water | In Lab/Sakai (Assignments) | 25 | |
| Notebook Pages – Analysis of Vitamin C content in a Supplement Tablet | In Lab/Sakai (Assignments) | 25 | |
| Notebook Pages – % $H_2O_2$ in Dental Whiteners | In Lab/Sakai (Assignments) | 25 | |
| Notebook Pages – Spectrophotometric Analysis of a Sports Drink | In Lab/Sakai (Assignments) | 25 | |
| Notebook Pages – Spectrophotometric Analysis of Aspirin Tablet | In Lab/Sakai (Assignments) | 25 | |
| **Total Lab + Notebook Points** | **Sakai (Assignments)** | **170** | |
| | | | |
| Quiz 1 – Syllabus, Course Policies, and Safety | Sakai (Tests & Quizzes) | 20 | **15%** |
| Quiz 2 - Beanium | Sakai (Tests & Quizzes) | 20 | |
| Quiz 3 - Determination of Calcium Concentration in Loyola Water | Sakai (Tests & Quizzes) | 20 | |
| Quiz 4 – Titrations and Stoichiometry | Sakai (Tests & Quizzes) | 20 | |
| Quiz 5 - Spectrophotometric Analysis | Sakai (Tests & Quizzes) | 20 | |
| Quiz 6 – Cumulative Quiz | Sakai (Tests & Quizzes) | 20 | |
| **Total Quiz Points** | **(Lowest Quiz Dropped)** | **100** | |
| | | | |
| Basic Statistics in Excel | Sakai (Assignments) | 20 | **10%** |
| Graphing in Excel, Sports Drink Lab | Sakai (Assignments) | 20 | |
| Graphing in Excel, Aspirin Tablet Lab | Sakai (Assignments) | 20 | |
| **Total Excel Activities Points** | | **60** | |

| | | | |
|---|---|---|---|
| Formal Laboratory Report 1, Peer Review | Sakai (Assignments) | 15 | **15%** |
| Formal Laboratory Report 1, Final Submission | Sakai (Assignments) | 85 | |
| **Total Formal Laboratory Report Points** | | **100** | |
| | | | |
| Clean Up, In Lab Safety, Lab Prep | In Lab (Labs #1-7) | 10/lab | **5%** |
| **Total Clean Up, In Lab Safety, Lab Prep** | | **70** | |

**Grade if Absent:**
A zero (0) is recorded for work not completed, absent or not. The Lab Coordinator has the right to fail a student if two or more absences occur during or if a formal lab report is not turned in. The Lab Coordinator may ask for documentation for reasons of an absence whether it is sickness, family emergency, car trouble, funeral, etc.

**If you miss a lab, contact your primary Laboratory Coordinator immediately**. Request sample data for the lab experiment missed. The sample data is similar to what you may have obtained in lab and may help you study for homework and/or a lab report. You will be responsible for understanding the missed material, and **normal deadlines always apply for completing homework on Sakai. Sample data is worth no points.**

**If a student misses two or more lab periods, the result is academic failure *regardless* of the performance/grade in the course at the time of the absences.** It is unacceptable to sign up for a course and think it is ok to not attend. Attendance is mandatory.

**Contact the Lab Coordinator to understand if there is any possibility to makeup the lab experiment or if points associated with the lab experiment's notebook are lost permanently.**

**Late Work Policies:**
QUIZZES: If not completed on time, a 0 is the final grade. Quizzes cannot be accessed after the due date.

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 pages are not turned in a 0 is the final grade.

EXCEL WORK: 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 work is not turned in a 0 is the final grade.

FORMAL LAB REPORT 1: For peer review, if the report draft is not submitted on time, a 24-hour grace period is allotted to turn the work in late and participate in the peer review [a 2pt penalty for lateness is applied to grade]. After 24 hours, if the report is not turned in a 0 out of 15 for the peer review is the final grade. For the final draft of the report, if not submitted on time a

1-week grace period is allotted to turn the work in late [2pt penalty per day for lateness applied to grade]. After 1-week, if the final draft is not turned in a 0 is the final grade.

LABSTERS: If not completed on time, a 1-week grace period is allotted to turn the work in late. After 1-week, if the Labster simulation work is not completed a 0 is the final grade for it.

As a student in this course, by enrolling you agree to follow and abide by all due dates and understand grades will suffer if work is not turned in on time or if work is not turned in at all.

## EDUCATIONAL GOAL

In this general chemistry laboratory course, my purpose as your Lab Coordinator is to provide a hands-on introduction to experimental methods of scientific investigation in Chemistry. The fundamental models of chemistry discussed in lecture will provide the basis for understanding the experimental laboratory work. Each lab will provide a practical opportunity for you to gain competence with the basic techniques of lab work and the practical experience necessary to understand its significance. My goal is that the lab experience will encourage students who are seeking intellectual challenges along with an understanding of the chemical principles in the lab.

Conducting experiments and collecting data to test the validity of theories and models requires a different set of skills that those required for success in the lecture part of a general chemistry course. During a laboratory activity, each student's hands, mind, eyes, as well as other senses are focused on the task at hand. Success in the lab involves skills in making perceptive qualitative observations and accurate quantitative measurements. With each laboratory experiment, relevant questions are posed, and along with TA, I help each student to execute a laboratory approach which will yield reliable data related to these questions. Each student is required to obtain data and to depend upon this data when answers to these questions are drafted. All labs are structured enough so that you should not feel lost or confused, but not so structured that you will find it unnecessary to think for yourself.

## REGARDING SAKAI AND TECHNICAL DIFFICULTIES

It is *strongly encouraged* that all required submissions to Sakai as well as writing lab reports, opening course/data/experiment files, be done on a reliable wired internet connection [not wireless], that of which the University itself provides in the Information Commons and various computer labs on the Lake Shore Campus.

Under NO circumstances will excuses of "technical difficulties" be accepted as this syllabus is stating all students should use a wired internet University computer [not wireless internet] to submit work in Sakai, write lab reports, open course/data/experiment files. This list is not exhaustive and it should be noted that any activities this course may require a computer or internet connection for should be completed using University computers with wired internet connection. Use of home internet [wired or wireless], University wireless, or public wireless is at your, the student's, own risk. It is not prohibited but as stated in this syllabus, Lab Coordinator is not responsible for technical difficulties of non-University devices [cell 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 do not count as reliable internet connection tools."

## ACADEMIC INTEGRITY

The standard of academic integrity and personal honesty delineated in the College of Arts & Sciences Statement on Academic Integrity is expected of every student and will be enforced. Details can be found at http://www.luc.edu/cas/faculty_resources.shtml. Cheating can take many forms in lab, but the most common forms are copying data and answers to analysis questions, sharing files for homework, or completing Sakai work with another person. The data and analysis as well as the homework submitted for grading must be your own. If it is not, no credit will be awarded for the entire lab, nor will make-ups be granted. Findings of dishonest academic behavior are reported to the Chair of the Chemistry Department and to the Dean's Office and are entered into an individual's record. Copied work will result in a penalty for all students involved.

## AI STATEMENT

Regarding the use of Artificial Intelligence: our Provost has expressed to "Let us all make sure we are learning and sharing best practices and not allowing AI to do the learning for us." In this course, any work you submit for credit must represent your own ideas and understanding of the assigned material. If you are uncertain about any case where your use of AI may be in conflict with University or course standards, please see your Lab Coordinator to discuss your concerns. AI cannot be used for formal lab reports nor other course materials. Why? The Lab Coordinators have seen how AI produces false scientific information, plagiarized info, and made-up fake references. You do not want to find yourself in a situation where your work is in question.

## DISABILITY ACCOMMODATIONS

If you have a documented disability and wish to discuss academic accommodations, see/contact your primary Laboratory Coordinator by the first week of lab. The Coordinator of Student Accessibility Center (SAC) is in the Sullivan Center and must be contacted independently. Certain accommodations may not be possible due to the nature of the lab course.

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 Laboratory Coordinator receives proper documentation. Furthermore, accommodations are not retro-active and begin only once appropriate documentation has been received and signed by the Laboratory Coordinator in a timely manner. Recognize that the course time scheduled in LOCUS is fixed. No extra time on wet chemistry is given to a student with an SAC letter; it is not possible and the SAC office has been made aware of this. Only those accommodations that are specifically listed in the formal SAC letter will be provided. If an accommodation letter suggests the Testing Center be utilized to take an exam, it is the student's responsibility to schedule the testing time in the center. There are no exams in this course. Review SAC Policies.

## 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 term, students will receive an email from the Office of Institutional Effectiveness with a reminder to provide feedback on the CHEM 161 course the student is enrolled in. This office will send you constant reminders during the open

period of feedback until the evaluation has been completed. The evaluation is completely anonymous. When the results are released, 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.

## LOST AND FOUND

Any items mistakenly left in lab will be taken to the Chemistry Department office, 125 Flanner Hall, and can be identified and claimed there. **Please put your name on your Composition notebook, lab manual, calculators, lab goggles, lab coat [tag], and other personal items.**

## ADDITIONAL STUDENT RESOURCES

Below are links to information in the event that students need more structured guidance on using the tools in the course. A link to the University Help Desk is provided for technology questions. Students can email the Lab Coordinator. However, links below may reveal the answer quickly.

First and Second Year Advising

Information Technology Service Desk (ITS Help Desk)

Labster Simulation Support and Tips

Panopto Information

Resource Guide for Online Learning

SAKAI student guide

Success Coaching and Writing Center

Student Accessibility Center

ZOOM Information and Contacting ZOOM Support

## PRIVACY POLICY AND SHARING OF COURSE MATERIALS

Materials from the course cannot be shared outside the course without the instructor's written permission.

## SAFETY IN THE LABORATORY

**Laboratory safety is everyone's responsibility. By registering for and participating in this course you agree to abide by all the safety precautions, information, and rules provided to you in the syllabus as well as in or outside of the laboratory. Failure to follow these rules constitutes grounds for withdrawing the offending student from the lab session and or course at any time.**

The Laboratory Coordinator, TA, and University take safety in the laboratory very seriously. Make sure to always listen to information regarding extra safety precautions when applicable. The rules of safety listed on the following page are reviewed during the first day of the laboratory course. Practice safe laboratory conduct during the entire term and beyond. This list is not exhaustive, and it is the student's responsibility to understand the proper, safe conduct when working in a laboratory. Students cannot complete experiments in the course unless the safety lecture and safety form are completed.

By using common sense and following all of the safety rules provided, it is unlikely that you or your classmates will be involved in or injured in a mishap in the laboratory. While it is very important that you do your part to prevent an accident from occurring, it is just as important to know what to do if someone is injured.

There are several key safety features of a laboratory that will be pointed out during the first day of class. Preventing an accident or injury from occuring is the ideal case scenario, which is why proactively being safe in the laboratory is desired. We live in the real-world and therefore have to be reactive in case of a lab incident.

Although not a requirement, it can be very helpful if a Laboratory Coordinator knows if a student has a condition that could possibly render an unsafe lab situation (allergies to latex, heart condition, seizure risk, etc.). Do feel free to discuss any concerns you may have regarding health conditions and laboratory work.

**Your commitment to safety [including the following rules] is very important:**

1. Watching the required Panopto videos on the lab experiment *before* coming to lab to complete the experiment to ensure students are aware of chemicals, equipment, and safety.
2. To always be on time to the lab. Coming in late violates safety. Pre-lab lecture starts on time and missing any of its content is unsafe.
3. To always wear approved safety goggles[1] and a [buttoned] long-sleeve laboratory coat in the laboratory. Safety glasses are NOT allowed under any circumstances.
4. Non-latex, nitrile gloves are optional but *highly* encouraged, especially when working with acids and bases or solvents. Do not wear gloves in the hallway or anywhere outside of the lab. Gloves are provided for free in the laboratory!
5. To know both the location of and how to use eye washes.
6. Not to wear contacts in the laboratory. Eyeglasses are recommended.
7. To wear appropriate clothing that minimizes potential chemical contact with your skin. A lab coat is required, as are shoes that adequately cover the <u>entire</u> foot. Sandals, open-toe shoes, perforated shoes, open-backed shoes are not acceptable. No skin should be exposed on your feet, ankles, or legs, so clothing that covers and protects your body from the waist down (including ankles) should be worn. You must be dressed appropriately to do experiments.
8. To know both the location of and how to use the safety showers.
9. To know both the location of and how to use the fire extinguishers.

10. To know the proper clean-up and disposal procedure for broken glass.
11. Not to perform unauthorized and unknown experiments, nor work in the lab alone.
12. Not to take chemicals or equipment out of the laboratory.
13. Not to engage in horseplay or any clowning around that may endanger you or other students.
14. Not to eat, drink, chew gum, or smoke anything in the laboratory at any time. No headsets, cell phones, or any other audio devices.
15. Cell phones cannot be used as calculators.
16. To pull long hair back, keeping it away from chemicals and open flame.
17. To keep your lab space clean and tidy. Lock your lab locker when done.
18. To ask your Instructor or TA when in doubt about procedures.
19. Inform your Instructor of any health condition you have that might affect your performance or safety in the laboratory. This could include allergies, sleeping disorders, balance/orientation disorders, seizure susceptibility, impaired visions, etc. It is up to the student to disclose anything they feel could put them at increased safety risk in the laboratory. Anything revealed will remain confidential [between student, TA, and Lab Coordinator].

This list is not exhaustive. The Lab Coordinator and/or Teaching Assistants reserve the right to make a judgement call on an activity they deem unsafe taking place in the laboratory. Safety is a priority and students who do not follow the rules can be removed from the course, and if necessary, Campus Safety will be called.

If you have any questions regarding the content of this syllabus, including the safety information provided, you are encouraged to discuss all questions/concerns with the Laboratory Coordinator. The information provided on the following page is some basic reactive procedures to different scenarios that have occurred in the laboratory.

**FIRST AID BASICS**

*Minor Cuts:* Clean wound, remove foreign material. Band-Aids available. Two Band-Aid rule: If you bleed through one Band-Aid, another should be applied over the first Band-Aid. If you bleed through two Band-Aids in a few minutes, you will be escorted to the Wellness Center. Additionally, if there is any possibility of broken glass in a cut, you will be escorted to the Wellness Center via Campus Safety personnel.

*Minor Burns from Fire:* Immerse affected area in ice water.

*Chemicals in Eyes:* Immediately flush eyes with water at the eye wash. Continue with flush for at least 10 minutes. Hold the affected eye(s) open to do this properly.

*Chemicals on Skin:* Rinse affected area with water immediately at the sink or safety shower. If the clothing is affected, remove clothes before rinsing! Continue rinsing for at least 10 minutes.

**Critical Injuries** may include glass in his/her eye(s), serious cuts, severe chemical burns, severe fire burns, seizures. **Immediately call for help using either the lab phone (security number is taped to phone handle, 8-6039) or the emergency phone in the hallway directly outside the laboratory.** Anyone with chemicals or foreign objects in his/her eye(s) will be escorted to the Wellness Center or to the hospital.

**FIRE HAZARDS**

The primary heat source in this laboratory is an electric hot plate. It can serve as an ignition source for combustible materials in the lab, such as paper (lab handouts, paper towels, filter paper, etc.), plastics (wash bottle), flammable liquids (acetone, ethanol). Proper operation of a hot plate and the absence of combustible materials in the proximity of the hot plate significantly reduces the risk of a fire or injury. Keep chords, plastic, and paper products away from hot plates. Make sure hot plates are off & un-plugged before leaving lab. Avoid spilling chemicals on hot plates.

Each lab is equipped with several fire extinguishers, fire blankets, and safety showers, which should be used in a fire emergency.

*In a case of a fire:*

Remain calm; alert the instructor and your immediate neighbors.
Personal safety, yours and others in the labs, is always the top priority.
A small fire in a small container can be suffocated by covering it with a watch glass or inverted beaker.
With a somewhat larger fire, decide whether or not you think you can control it with a fire extinguisher.

*Use of a Fire Extinguisher:*

Located by the 4 doors in the lab; a back-up fire extinguisher is in the hallway [west].
Maintain an escape position; i.e. stay between the fire and the doorway.
**PASS (pull, aim, squeeze, sweep).**
**Break the plastic ring, pull out the metal ring, release the hose from the bracket, direct the hose at the base of the flames, and press the lever down.**

Note: Fire extinguishers are heavy and not particularly easy to direct. These are multi-purpose, dry chemical extinguishers, safe for anything we use in the lab.

See next pages for detailed schedule of pre-lab lecture requirements, in lab experiments, and homework items.

The Laboratory Coordinators reserve the right to revise any content in the syllabus or course in order to correct any unintentional mistakes and/or to change the labs or lab directions for the class if necessary. Students will be notified if any changes have been made.

**Academic Calendar:** It is the student's responsibility to know the schedule for this course as well as the official University Academic Calendar of important dates.

## Tentative Chem 161 Order of Lab Experiments

Following the first lab, students will be grouped into two groups, A and B. These groups will alternate between synchronous and asynchronous activities depending on the week OR will both be in person. The tentative order of activities for each group is shown below.

| | |
|---|---|
| Syllabus/Safety | Syllabus, safety, glassware/drawer check-in/Beanium Intro to Data |
| Lab #1 | Beanium Intro and Data/ Significant Figures (SF) |
| Lab #2 | Volumetric Glassware Measurements with Pop/Soda |
| Asynch #1 | Excel Statistics, Chem and Lab Safety Labsters |
| Lab #3 | Hard Water Analysis |
| Asynch #2 | Solution Prep and Titration Labsters |
| Lab #4 | Vitamin C Analysis via Titration |
| Asynch #3 | Formal Report Writing and Pipetting Labster |
| Lab #5 | Mouthwash Analysis via Titration |
| Asynch #4 | Formal Report Peer Review |
| Lab #6 | Sports Drink Analysis in Lab, Excel Lab Data Graph for Homework |
| Asynch #5 | Spectrophotometer Labster, Final Draft Formal Report Update |
| Lab #7 | Aspirin Analysis in Lab, Excel Lab Data Graph for Homework |
| Check Out | Wrap up semester |

**Semester calendar schedule of laboratory on the next several pages**

**Tentative Calendar of Chem 161, Summer 2024**

| Month | Mon | Tue | Wed | Thu | Fri |
|---|---|---|---|---|---|
| **May 2024** | 20 | 21 **First Day** Intro, Safety, Glassware & **Lab #1** ALL STUDENTS – Beanium | 22 | 23 **Lab #2** ALL STUDENTS – Volume Measurements | 24 |
| | 27 | 28 **Lab #3** GROUP A only – Hard Water Determination | 29 | 30 **Lab #3** GROUP B only – Hard Water Determination | 31 |
| **June 2024** | 3 | 4 **Lab #4** Group A Vitamin C Tablet Analysis via Titration | 5 | 6 **Lab #4** Group B Vitamin C Tablet Analysis via Titration | 7 |
| | 10 | 11 **Lab #5** Group A Mouthwash Analysis via Titration | 12 | 13 Asynchronous Formal Report Peer Review<br><br>**Lab #5** Group B Mouthwash Analysis via Titration | 14 |
| | 17 | 18 **Lab #6** GROUP A only – Sports Drink Analysis | 19 | 20 **Lab #6** GROUP B only – Sports Drink Analysis | 21 Last day to withdraw with a grade of "W" |
| | 24 | 25 **Lab #7** ALL STUDENTS – Spec Aspirin Tablet Analysis | 26 | 27 **Last Day** Check Out, Undergrad Research Info<br><br>Make Up Lab Day | 28 |

**Tentative Daily Lab Experiments and Assigned Course Work**

Daily schedule shows required pre-lab work, in-lab experiments, and homework. Review the schedule daily. Do not expect leniency if you forget to turn in course work; the schedule will not be changed. See Late Work Policy. Group A and B have separate schedules below.

Items with parentheses ( ) tell where the item is in Sakai. For example, "Quiz on Safety and Course Policies (*Tests & Quizzes)*" means the quiz is in the Tests & Quizzes tool in Sakai.

## GROUP A

| GROUP A Weekly Activities | | |
|---|---|---|
| **Week and Class Dates** | **Daily Lab Activity/Experiment** | **Material Due** |
| **Day 1**<br>**Tue 5/21** | **Synchronous – Lab 1**<br><br>Intro, Safety, Glassware<br>& Lab #1 - Beanium | **Due By Start of Next Lab Period:**<br>**1.** Read syllabus in Sakai *(Syllabus)* and explore the site.<br>**2.** Buy required items.<br>**3.** Syllabus, Course Policies, Safety quiz in Sakai (*Tests and Quizzes*)<br>***4.*** Watch lecture on Significant Figures and Glassware *(Panopto)*<br>**5.** Watch lecture on Lab #2 Volumetric Measurements Lab (*Panopto*)<br>**6.** Read PDF lab manual in Sakai for Beanium & Volumetric Measurements experiment (*Resources*)<br>**7.** Watch JoVE videos on Lab Glassware and Lab Techniques<br>**8.** Labster Demo (*Labster sims)*<br>**9.** Submit Beanium Lab data sheet to Sakai (*Assignments)* |
| **Day 2**<br>Thu 5/23 | **Synchronous – Lab 2**<br><br>Lab #2 Volumetric Glassware<br><br>Collect classroom data | **Due By Start of Next Lab Period:**<br>1. Submit Volumetric Glassware notebook pages to Sakai (*Assignments)*<br>2. Write necessary info in lab notebook, will be checked at start of class.<br>3. Lab Safety Labster *(Labster Sims)*<br>4. Chemical Safety Labster *(Labster Sims)*<br>5. Watch lecture on Lab #3 Hard Water lab (*Panopto*)<br>6. Read PDF lab manual in Sakai for Hard Water experiment (*Resources*) |
| **Day 3**<br>Tue 5/28 | **Synchronous – Lab 3**<br><br>Complete Lab #3 Hard Water Analysis<br>Collect classroom data | **Due By Start of Next Lab Period:**<br>**1.** Beanium quiz in Sakai (*Tests & Quizzes*)<br>**2.** Submit Hard Water Lab notebook pages to Sakai (*Assignments*)<br>**3.** Start Asynchronous 1 items. |
| **Day 4**<br>Thu 5/30 | **Asynchronous – 1**<br><br>Basic Statistics in Excel<br>Chemical Safety Labster<br>Lab Safety Labster | **Due By Start of Next Lab Period:**<br>**1.** Watch lecture on Basic Stats in Excel (*Panopto*)<br>**2.** Submit Excel Stats File to Sakai (*Assignments*)<br>**3.** Watch JoVE videos on Solution Preparation and Stoichiometry and Titrations *(Lessons)*<br>**4.** Write necessary info in lab notebook, will be checked at start of class.<br>**5.** Watch lecture on Lab #4 Vitamin C (*Panopto*) |

| GROUP A Weekly Activities | | |
|---|---|---|
| **Week and Class Dates** | **Daily Lab Activity/Experiment** | **Material Due** |
| | | **6.** Read PDF lab manual in Sakai for Vitamin C experiment (*Resources*)<br>**7.** Write necessary info in lab notebook, will be checked at start of class. |
| **Day 5**<br>Tue 6/4 | **Synchronous - Lab 4**<br><br>Complete Lab #4 Vitamin C<br>Collect classroom data | **Due By Start of Next Lab Period:**<br><br>**1.** Submit Vitamin C Lab notebook pages to Sakai (*Assignments*) |
| **Day 6**<br>Thu 6/6 | **Asynchronous – 2**<br><br>Solution Prep Labster<br>Titration Labster | **Due By Start of Next Lab Period:**<br><br>**1.** Solution Prep Labster (*Labster Sim*)<br>**2.** Titration Labster in (*Labster Sim*)<br>**3.** Watch lecture on Peer Review *(Panopto*) and read PDF guidelines for the Peer Review process (*Resources*)<br>**4.** Watch lecture on Lab #5 Mouthwash (*Panopto*)<br>**5.** Read PDF lab manual in Sakai for Mouthwash experiment (*Resources*)<br>**6.** Write necessary info in lab notebook, will be checked at start of class. |
| **Day 7**<br>Tue 6/11 | **Synchronous – Lab 5**<br><br>Complete Lab #5 Mouthwash Analysis<br>Collect classroom data<br><br>Write a rough draft of a formal report for Lab 3, Hard Water<br>Pipetting Labster | **Due By Start of Next Lab Period:**<br><br>**1.** Submit Mouthwash Analysis Lab notebook pages to Sakai (*Assignments*)<br>**2.** Pipetting Labster *(Labster Sim*)<br>**3.** Watch lecture on Formal Lab Report *(Panopto, Lessons*) and read PDF guidelines of a Formal Report (*Resources*)<br>**4.** Type formal lab report rough draft on Hard Water Lab. Submit to Sakai (*Assignments*)<br>**5.** Hard Water quiz in Sakai (*Tests & Quizzes)* |
| **Day 8**<br>Thu 6/13 | **Asynchronous 3**<br><br>Complete Peer reviews.<br>Pipetting Labster *(Labster Sim*) | **Due By Start of Next Lab Period:**<br><br>**1.** Pipetting Labster *(Labster Sim*)<br>**2.** Watch lecture on Peer Review *(Panopto*) and read PDF guidelines for the Peer Review process (*Resources*)<br>**3.** Complete the peer review process in Sakai (*Assignments*) - Due at the start of your class time Day 9 – no late submissions!<br>**4.** Watch lecture on Lab #6 Sports Drink Analysis (*Panopto*)<br>**5.** Read PDF lab manual in Sakai for Sports Drink Analysis experiment (*Resources*)<br>**6.** Write necessary info in lab notebook, will be checked at start of class. |

| GROUP A Weekly Activities | | |
|---|---|---|
| **Week and Class Dates** | **Daily Lab Activity/Experiment** | **Material Due** |
| | | |
| **Day 9**<br>Tue 6/18 | **Synchronous – Lab 6**<br><br>Complete Lab #6 Sports Drink Analysis<br>Collect classroom data<br><br>Recreate calibration curve from lab 6 in Excel | **Due By Start of Next Lab Period:**<br><br>1. Submit Sports Drink Lab notebook pages to Sakai (*Assignments*)<br>2. Submit Excel of Sports Drink Standard Curve to Sakai (*Assignments*)<br>*3.* Titration & Stoichiometry quiz in Sakai (*Tests & Quizzes)* |
| **Day 10**<br>Thu 6/20 | **Asynchronous 4**<br><br>Review peer feedback & update Formal Report. Submit final draft.<br>Spectrophotometry Labster | **Due By Start of Next Lab Period:**<br><br>**1.** Review peer comments on formal lab report, make changes, and submit a final draft to Sakai (*Assignments*)<br>**2.** Spectrophotometer Labster (*Labster Sim*)<br>**3.** Watch lecture on Lab #7 Aspirin (*Panopto*)<br>**4.** Read PDF lab manual in Sakai for Aspirin experiment (*Resources*)<br>**5.** Write necessary info in lab notebook, will be checked at start of class. |
| **Day 11**<br>Tue 6/25 | **Synchronous – Lab 7**<br><br>Complete Lab #7 Aspirin Analysis<br>Collect classroom data<br><br>Recreate calibration curve from lab 7 in excel | **Due By Start of Next Lab Period:**<br><br>**1.** Submit Aspirin Lab notebook pages to Sakai (*Assignments*)<br>**2.** Submit Excel of Aspirin Standard Curve to Sakai (*Assignments*)<br>**3.** Spectrophotometric analysis quiz in Sakai (*Tests & Quizzes*)<br>**4.** Cumulative topics quiz in Sakai (*Tests & Quizzes)*<br>**5.** Check Gradebook in Sakai and address all questions with lab coordinator. |
| **Day 12**<br>Thu 6/27 | **Synchronous - Checkout/ Makeup Day**<br><br>Clean lab glassware/Locker Checkout<br>Ask last minute grading questions<br>Chat about UG research opportunities, etc. | **Due By Start of Next Lab Period:**<br><br>**Review any grade issues with instructor.** Grades are final when you walk out of the lab.<br><br>MAKE UP STUDENTS: Notebook pages are due in Sakai before you leave lab. |

## GROUP B

| GROUP B Weekly Activities | | |
|---|---|---|
| **Week and Class Dates** | **Daily Lab Activity/Experiment** | **Material Due** |
| **Day 1**<br>**Tue 5/21** | **Synchronous – Lab 1**<br><br>Intro, Safety, Glassware<br>& Lab #1 - Beanium | **Due By Start of Next Lab Period:**<br>**1.** Read syllabus in Sakai *(Syllabus)* and explore the site.<br>**2.** Buy required items.<br>**3.** Syllabus, Course Policies, Safety quiz in Sakai (*Tests and Quizzes*)<br>***4.*** Watch lecture on Significant Figures and Glassware *(Panopto)*<br>**5.** Watch lecture on Lab #2 Volumetric Measurements Lab (*Panopto*)<br>**6.** Read PDF lab manual in Sakai for Beanium & Volumetric Measurements experiment (*Resources*)<br>**7.** Watch JoVE videos on Lab Glassware and Lab Techniques<br>**8.** Labster Demo (*Labster sims)*<br>**9.** Submit Beanium Lab data sheet to Sakai (*Assignments)* |
| **Day 2**<br>Thu 5/23 | **Synchronous – Lab 2**<br><br>Lab #2 Volumetric Glassware<br><br>Collect classroom data | **Due By Start of Next Lab Period:**<br>1. Submit Volumetric Glassware notebook pages to Sakai (*Assignments)*<br>2. Write necessary info in lab notebook, will be checked at start of class.<br>3. Lab Safety Labster *(Labster Sims)*<br>4. Chemical Safety Labster *(Labster Sims)*<br>5. Watch lecture on Lab #3 Hard Water lab (*Panopto*)<br>6. Read PDF lab manual in Sakai for Hard Water experiment (*Resources*) |
| **Day 3**<br>Tue 5/28 | **Asynchronous – 1**<br><br>Basic Statistics in Excel<br>Chemical Safety Labster<br>Lab Safety Labster | **Due By Start of Next Lab Period:**<br>**1.** Watch lecture on Basic Stats in Excel (*Panopto*)<br>**2.** Submit Excel Stats File to Sakai (*Assignments*)<br>**3.** Watch JoVE videos on Solution Preparation and Stoichiometry and Titrations *(Lessons)*<br>**4.** Write necessary info in lab notebook, will be checked at start of class.<br>**5.** Watch lecture on Lab #4 Vitamin C (*Panopto*)<br>**6.** Read PDF lab manual in Sakai for Vitamin C experiment (*Resources*)<br>**7.** Write necessary info in lab notebook, will be checked at start of class. |
| **Day 4**<br>Thu 5/30 | **Synchronous – Lab 3** | **Due By Start of Next Lab Period:**<br>**1.** Beanium quiz in Sakai (*Tests & Quizzes*) |

| GROUP B Weekly Activities | | |
|---|---|---|
| **Week and Class Dates** | **Daily Lab Activity/Experiment** | **Material Due** |
| | Complete Lab #3 Hard Water Analysis<br>Collect classroom data | **2.** Submit Hard Water Lab notebook pages to Sakai (*Assignments*) |
| **Day 5**<br>Tue 6/4 | **Asynchronous – 2**<br><br>Solution Prep Labster<br>Titration Labster | **Due By Start of Next Lab Period:**<br><br>**1.** Solution Prep Labster (*Labster Sim*)<br>**2.** Titration Labster in (*Labster Sim*)<br>**3.** Watch lecture on Peer Review *(Panopto*) and read PDF guidelines for the Peer Review process (*Resources*)<br>**4.** Watch lecture on Lab #5 Mouthwash (*Panopto*)<br>**5.** Read PDF lab manual in Sakai for Mouthwash experiment (*Resources*)<br>**6.** Write necessary info in lab notebook, will be checked at start of class. |
| **Day 6**<br>Thu 6/6 | **Synchronous - Lab 4**<br><br>Complete Lab #4 Vitamin C<br>Collect classroom data | **Due By Start of Next Lab Period:**<br><br>**1.** Submit Vitamin C Lab notebook pages to Sakai (*Assignments*)<br>**2.** Start on Asynchronous 2 items |
| **Day 7**<br>Tue 6/11 | **Asynchronous 3**<br><br>Complete Peer reviews.<br>Pipetting Labster *(Labster Sim*) | **Due By Start of Next Lab Period:**<br><br>**1.** Pipetting Labster *(Labster Sim*)<br>**2.** Watch lecture on Peer Review *(Panopto*) and read PDF guidelines for the Peer Review process (*Resources*)<br>**3.** Complete the peer review process in Sakai (*Assignments*) - Due at the start of your class time Day 9 – no late submissions!<br>**4.** Watch lecture on Lab #6 Sports Drink Analysis (*Panopto*)<br>**5.** Read PDF lab manual in Sakai for Sports Drink Analysis experiment (*Resources*)<br>**6.** Write necessary info in lab notebook, will be checked at start of class. |
| **Day 8**<br>Thu 6/13 | **Synchronous – Lab 5**<br><br>Complete Lab #5 Mouthwash Analysis<br>Collect classroom data<br><br>Write a rough draft of a formal report for Lab 3, Hard Water<br>Pipetting Labster | **Due By Start of Next Lab Period:**<br>**1.** Submit Mouthwash Analysis Lab notebook pages to Sakai (*Assignments*)<br>**2.** Pipetting Labster *(Labster Sim*)<br>**3.** Watch lecture on Formal Lab Report *(Panopto, Lessons*) and read PDF guidelines of a Formal Report (*Resources*)<br>**4.** Type formal lab report rough draft on Hard Water Lab. Submit to Sakai (*Assignments*) |

| GROUP B Weekly Activities | | |
|---|---|---|
| **Week and Class Dates** | **Daily Lab Activity/Experiment** | **Material Due** |
| | | **5.** Hard Water quiz in Sakai (*Tests & Quizzes)* |
| **Day 9**<br>Tue 6/18 | **Asynchronous 4**<br><br>Review peer feedback & update Formal Report. Submit final draft.<br>Spectrophotometry Labster | **Due By Start of Next Lab Period:**<br><br>**1.** Review peer comments on formal lab report, make changes, and submit a final draft to Sakai (*Assignments*)<br>**2.** Spectrophotometer Labster (*Labster Sim*)<br>**3.** Watch lecture on Lab #7 Aspirin (*Panopto*)<br>**4.** Read PDF lab manual in Sakai for Aspirin experiment (*Resources*)<br>**5.** Write necessary info in lab notebook, will be checked at start of class. |
| **Day 10**<br>Thu 6/20 | **Synchronous – Lab 6**<br><br>Complete Lab #6 Sports Drink Analysis<br>Collect classroom data<br><br>Recreate calibration curve from lab 6 in Excel | **Due By Start of Next Lab Period:**<br><br>1. Submit Sports Drink Lab notebook pages to Sakai (*Assignments*)<br>2. Submit Excel of Sports Drink Standard Curve to Sakai (*Assignments*)<br>*3.* Titration & Stoichiometry quiz in Sakai (*Tests & Quizzes)* |
| **Day 11**<br>Tue 6/25 | **Synchronous – Lab 7**<br><br>Complete Lab #7 Aspirin Analysis<br>Collect classroom data<br><br>Recreate calibration curve from lab 7 in excel | **Due By Start of Next Lab Period:**<br><br>**1.** Submit Aspirin Lab notebook pages to Sakai (*Assignments*)<br>**2.** Submit Excel of Aspirin Standard Curve to Sakai (*Assignments*)<br>**3.** Spectrophotometric analysis quiz in Sakai (*Tests & Quizzes*)<br>**4.** Cumulative topics quiz in Sakai (*Tests & Quizzes)*<br>**5.** Check Gradebook in Sakai and address all questions with lab coordinator. |
| **Day 12**<br>Thu 6/27 | **Synchronous - Checkout/ Makeup Day**<br><br>Clean lab glassware/Locker Checkout<br>Ask last minute grading questions<br>Chat about UG research opportunities, etc. | **Due By Start of Next Lab Period:**<br><br>**Review any grade issues with instructor.** Grades are final when you walk out of the lab.<br><br>MAKE UP STUDENTS: Notebook pages are due in Sakai before you leave lab. |