# CHEMISTRY 3710, Section UL1

**Tentative Schedule**

(Subject to moderate change)

Labs held on Thursdays, 1:30 p.m. – 4:20 p.m., in Bingham Building Room 134

<table>
<thead>
<tr>
<th>Experiment</th>
<th>Date</th>
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<tbody>
<tr>
<td>1/19</td>
<td>1/26</td>
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<tr>
<td>Course Policies, Safety Contracts/Quiz, Lab Drawer Check-In</td>
<td>Excel Introduction</td>
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<tr>
<td>0</td>
<td>2/26</td>
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<tr>
<td>1</td>
<td>2/2</td>
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<tr>
<td>Amino Acid Titrations</td>
<td>Sun Screens</td>
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<tr>
<td>2</td>
<td>2/9</td>
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<tr>
<td>3</td>
<td>2/16</td>
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<tr>
<td>Got Protein?</td>
<td>SDS-PAGE</td>
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<tr>
<td>4</td>
<td>3/2</td>
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<tr>
<td>Size Exclusion Chromatography</td>
<td>Lactase Enzyme Kinetics</td>
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<tr>
<td>5</td>
<td>3/9</td>
</tr>
<tr>
<td>6</td>
<td>3/16</td>
</tr>
<tr>
<td>Kinetics Data Analysis</td>
<td>PDB/Literature Databases Introduction*</td>
</tr>
<tr>
<td>7</td>
<td>3/23</td>
</tr>
<tr>
<td>8</td>
<td>3/30</td>
</tr>
<tr>
<td>Inhibiting the Flu*</td>
<td>Makeup Lab: The Flu Fights Back*</td>
</tr>
<tr>
<td>9</td>
<td>4/6</td>
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</tbody>
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The lab procedures and data analysis templates for this course will be available through our Canvas course page as .doc, .pdf, and/or .xlsx documents. For those that are password-protected, the password is **goggles4u**.

*There will be no notebook pages required for Labs 7, 8, and 9. However, you will have to hand in a lab report for Labs 7, 8, and 9.
CHEMISTRY 3710, Section UL1
Th, 1:30 p.m. – 4:20 p.m., Bingham Building Room B134
Introductory Biochemistry Laboratory
Spring 2021

General Information
Instructor: Dr. Mike Christiansen (please call me Mike)
Email: m.christiansen@usu.edu (please do NOT email me through Canvas; I don’t check it)
Office: 221G Bingham Building
Office hours: Thursdays, 4:20 – 5:00 p.m.

Note: Please logon to Canvas regularly (https://online.usu.edu/) for announcements, assignments, grade postings, and alterations in the class and office hour schedules.

Materials
Lab Text: In this course, labs are available as Word/pdf documents on the website:
http://ion.chem.usu.edu/~harrisd/Classes/3710/Introductory%20Biochemistry%20Lab.html. The password is goggles4u.

Lab Notebook (required): Lab Notebooks are available at the USU bookstore (carbon-copy pages are absolutely necessary).

Splash Goggles, lab coat, full-length pants, socks, and “complete” (closed-toed) shoes are required in the laboratory. (See the “safety” section below.)

Corequisites: Chem 3700. Prior general and organic chemistry experience is expected.

Time: Thursdays, 1:30 – 4:20 p.m., Bingham Building Room B134

Canvas: Announcements, answer keys, notes, and other useful materials will be posted as needed on Canvas.

Course Description: This class focuses on providing hands-on experience with basic biochemistry lab techniques and instrumentation, complementary to CHEM 3700. This will involve directed reading, observations of demonstrations, performance of experiments, data analysis, and completion of laboratory reports. Exposure to these topics is appropriate for all pre-health and pre-vet professionals, along with majors in many other life science areas.

Course Objectives:
By the end of the semester you should:

1. Gain an appreciation of lab safety
2. Gain an understanding of enzyme kinetics and protein structure
3. Learn how to perform basic biochemistry lab techniques, including photometry, chromatography, and gel electrophoresis

*IDEA objectives 1-2: Gaining factual knowledge and Learning fundamental principles, generalizations, or theories

†IDEA objectives 3-4: Learning to apply course materials and Developing specific skills, competencies and points of view needed by professionals in the field

(For more on using the IDEA course evaluation system, please see the IDEA tutorial posted on Canvas.)
Course Fees: $55 lab fee for purchase of equipment and supplies

Lab Reports: All lab reports are due by the laboratory section meeting time one week after completion of the experiment. Late reports will be assessed a 10% penalty per week. The lab report for the final experiment (The Flu Fights Back) will be due at the conclusion of the lab period that it is performed.

Students must review all lab course grades at the grade check meeting time (April 9th – 13th). I also HIGHLY recommend that you keep all your graded work. In order to obtain the highest grade possible, all students are encouraged to complete all nine experiments. As a convenience, students may elect to check out of the lab at the grade check meeting and miss the ninth experiment (which will subsequently be dropped as the lowest scoring experiment). All students who choose to check out of the lab during the grade check meeting assume all final grade consequences of missing the ninth experiment.

Grade Breakdown:

<table>
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<tr>
<th>Grade Breakdown:</th>
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<tbody>
<tr>
<td>Lab safety contract</td>
<td>10 points (~2%)</td>
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<tr>
<td>Lab notebook pages (best 5 of 6, counted at 10 points each)</td>
<td>50 points (~10%)</td>
</tr>
<tr>
<td>Lab Reports (best 8 of 9, counted at 50 points each)</td>
<td>400 points (~83%)</td>
</tr>
<tr>
<td>Instructor Evaluation* (safety, cooperation, independence)</td>
<td>20 points (~4%)</td>
</tr>
<tr>
<td>Total</td>
<td>480 points</td>
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*The instructor will evaluate your performance over the entire semester based on your preparedness, adherence to safety rules, cooperativeness, safety, and ability to work efficiently and independently.

Final grades will be based upon the following scale, which is subject to modification:

A: 100-93%  A−: 92-90%  B+: 89-87%  B: 86-83%  B−: 82-80%
C+: 79-77%  C: 76-73%  C−: 72-70%  D: 69-60%  F: 59% and below

Absences: Attendance is mandatory. Experiments will not be rescheduled to an earlier date and time. Makeup experiments will not be offered. (Keep in mind, though, that your lowest lab score is dropped.) Under extreme circumstances (determined at the instructor’s discretion), modifications may be considered. Contact the instructor via email (m.christiansen@usu.edu) for specific questions.

Safety: The USU Chemistry and Biochemistry Department is committed to providing a safe and healthy environment for students, staff and faculty, as well as teaching appropriate respect for safety while engaged in scientific pursuits. Personal safety of each individual associated with the department is of primary importance. Through the department faculty and the department Safety Committee, every effort is made to ensure the availability and maintenance of all physical, chemical, biological, mechanical, radiological facilities, and equipment required for safety as per federal, state, local, and University policy.

- **Eye protection** – Goggles or safety glasses are required when working in the laboratory. Specific requirements may be found in the safety documentation of each laboratory.
- **Lab coat** – Lab coats are required when working in the laboratory.
- **Gloves** – Proper gloves are required when working in the laboratory. Check the compatibility of the gloves with the chemicals to be used. Take off the gloves before stepping out of the lab.
- **Safety equipment** – Know the locations of a fire extinguisher, eye-washer, safety shower, first aid box and chemical spill.
- **Food and drinks** – Food and drinks are not allowed in the laboratory. Food and drink containers must be disposed of outside the laboratory.
- **Shoes** – Shoes should cover the entire foot. Sandals, clogs, and other open toed or open-heeled shoes do not cover enough foot and are not allowed.
• **Hair** – Hair should not be worn in a style that impairs vision, cause distractions during job functions, or that may come in contact with work surfaces or moving equipment.

• **Transfer of chemicals** – For transporting chemicals outside the laboratory, place the chemicals in a secondary confinement and transport the chemicals on a cart. Alternatively, hand-carrying chemicals in a secondary confinement is acceptable. However, hand-carrying chemicals directly, without using a secondary confinement, outside the laboratory is forbidden. For transporting chemicals within the laboratory, always wear personal protective equipment including gloves, goggles and lab coat and carry the chemicals with caution. Never grab the container by the cap. Return the chemical to its designated storage site after use.

• **Fume hood** – Always make sure the fume hood is operational before use. Open the sash to proper height when operating a procedure. Avoid opening the sash too high, which may reduce the effectiveness of air flow. Avoid over accumulation of items in the fume hood that may obstruct the air flow. Lower the sash when the operation is complete.

• **Emergency exit** – Exits and aisles must not be obstructed by equipment, chairs, supplies, or trash. Doors to the laboratory must be kept closed, exit doors must not be blocked, locked, or obstructed in any way to inhibit egress.

• **Glassware** – Glassware must be cleaned after completion of the experiment. Large pieces of broken glass must be placed in the broken glass containers designated for large pieces of broken glass.

• **Chemical spills** – You must know the location of spill clean-up material in your laboratory. You must know the Spill Prevention and Response procedure for your laboratory.

• **Housekeeping** – Good housekeeping is an essential aspect of laboratory safety. The work area must be cleaned up at the end of each procedure and prior to the start of a new procedure.

• **Teaching Labs** – Students enrolled in laboratory courses in the Department of Chemistry & Biochemistry, as well as the teaching assistants assigned to these courses, are required to follow the general safety requirements listed above as well as any course specific guidelines and required documentation.

**COVID-19 Information** – Procedures for Working in the Laboratory During the Covid-19 Epidemic:

• Students will learn what section Cohort they are assigned to by reading the Cohort Assignment document on Canvas.

• Students will complete experiments during the time assigned to their Cohort.

• Students will enter the laboratory through the designated doors marked with clear signage.

• Students will exit the laboratory through the designated doors marked with clear signage.

• Students will wear face masks when entering the laboratory, working in the laboratory, and leaving the laboratory.

• Students will wash their hands when entering the laboratory and leaving the laboratory.

• Students will disinfect their work area before using the work area and after using the work area with provided disinfecting materials.

• Students will perform all work, including set-up, experiment performance, clean-up, and waste disposal, in their designated self-contained work areas.
University Policies

COVID-19 Classroom Protocols. In order to continue to provide various forms of face-to-face instruction at USU, and to limit the spread of COVID-19 during the pandemic, students are asked to follow certain classroom protocols during the fall 2020 semester. These protocols are based on CDC, state, and local health department guidelines and requirements are in place not only for your safety but also the safety of the entire campus community.

- Face coverings are required in all classrooms and teaching laboratories. Students will not be permitted to remain in class without a face covering, as per University Policy 20T.3. Students that do not adhere to the face covering policy will be referred to the Office of Vice President for Student Affairs for a possible violation of the Student Code of Conduct. There may be individual medical circumstances that prevent some students from using face coverings. If you require this exemption, contact the Disability Resource Center prior to the start of classes to investigate alternative instruction. These circumstances will be rare, but if they do exist, we ask that everyone be respectful.
- Follow faculty instructions regarding social distancing and entering/exiting classrooms.
- Stay home when you are sick, however mild your symptoms.
- Wash your hands frequently with soap and water.

Academic Freedom and Professional Responsibilities. Academic freedom is the right to teach, study, discuss, investigate, discover, create, and publish freely. Academic freedom protects the rights of faculty members in teaching and of students in learning. Freedom in research is fundamental to the advancement of truth. Faculty members are entitled to full freedom in teaching, research, and creative activities, subject to the limitations imposed by professional responsibility. USU Policy 403 (accessible at http://www.usu.edu/hr/files/uploads/Policies/403.pdf) further defines academic freedom and professional responsibilities.

Academic Integrity – the “Honor System.” The University expects that students and faculty alike maintain the highest standards of academic honesty. The Code of Policies and Procedures for Students at Utah State University (accessible at https://studentconduct.usu.edu/studentcode) addresses academic integrity and honesty and notes the following:

- **Academic Integrity:** Students have a responsibility to promote academic integrity at the University by not participating in or facilitating others’ participation in any act of academic dishonesty and by reporting all violations or suspected violations of the Academic Integrity Standard to their instructors.

- **The Honor Pledge:** To enhance the learning environment at Utah State University and to develop student academic integrity, each student agrees to the following Honor Pledge: “I pledge, on my honor, to conduct myself with the foremost level of academic integrity”. Violations of the Academic Integrity Standard (academic violations) include, but are not limited to cheating, falsification, and plagiarism.

**Plagiarism.** Plagiarism includes knowingly “representing by paraphrase or direct quotation, the published or unpublished work of another person as one’s own in any academic exercise or activity without full and clear acknowledgment. It also includes the unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials.” The penalties for plagiarism are severe. They include warning or reprimand, grade adjustment, probation, suspension, expulsion, withholding of transcripts, denial or revocation of degrees, and referral to psychological counseling.

**Course Fees:** $75 lab fee for purchase of equipment and supplies.

**Grievance Process.** Students who feel they have been unfairly treated in matters other than discipline, admission, residency, employment, traffic, and parking - which are addressed by procedures separate
Sexual Harassment. Utah State University is committed to creating and maintaining an environment free from acts of sexual misconduct and discrimination and to fostering respect and dignity for all members of the USU community. Title IX and USU Policy 339 (https://www.usu.edu/policies/339) address sexual harassment in the workplace and academic setting. The university responds promptly upon learning of any form of possible discrimination or sexual misconduct. Any individual may contact USU's Affirmative Action/Equal Opportunity (AA/EO) Office (http://aaeo.usu.edu/) for available options and resources or clarification. The university has established a complaint procedure to handle all types of discrimination complaints, including sexual harassment (USU Policy 305, https://www.usu.edu/policies/305/), and has designated the AA/EO Director/Title IX Coordinator as the official responsible for receiving and investigating complaints of sexual harassment.

Students with Disabilities. USU welcomes students with disabilities. If you have, or suspect you may have, a physical, mental health, or learning disability that may require accommodations in this course, please contact the Disability Resource Center (DRC) as early in the semester as possible (University Inn # 101, 435-797-2444, drc@usu.edu). All disability related accommodations must be approved by the DRC. Once approved, the DRC will coordinate with faculty to provide accommodations.

Withdrawal Policy and “I” Grade Policy. If a student does not attend a class during the first week of the term or by the second class meeting, whichever comes first, the instructor may submit a request to have the student dropped from the course. (This does not remove responsibility from the student to drop courses which they do not plan to attend.) Students who are dropped from courses will be notified by the Registrar’s Office through their preferred e-mail account. Students may drop courses without notation on the permanent record through the first 20 percent of the class. If a student drops a course following the first 20 percent of the class, a W will be permanently affixed to the student’s record (check General Catalog for exact dates). Students with extenuating circumstances should refer to the policy regarding Complete Withdrawal from the University and the Incomplete (I) Grade policy in the General Catalog.

No-Test Days Policy. For classes that meet for a full semester, a five-day period designated as "no-test" days precedes final examinations. During this time, no major examinations, including final examinations will be given in order that students may concentrate on classwork, the completion of special assignments, writing projects, and other preparation for duly scheduled final examinations. Approved exceptions include final papers, weekly chapter quizzes, quizzes, projects, and examinations associated with a lab that does not meet during final examinations. This policy does not apply to classes that meet only during the second 7-week session of the semester or to classes offered during the summer term. Complete information related to Final Examination Policies (https://catalog.usu.edu/content.php?catoid=12&navoid=3311) can be reviewed in the General Catalog.

Assumption of Risk. All classes, programs, and extracurricular activities within the University involve some risk, and some involve travel. The University provides opportunities to participate in these programs on a voluntary basis. Therefore, students should not participate in them if they do not care to assume the risks. Students can ask the respective program leaders/sponsors about the possible risks a program may generate, and if students are not willing to assume the risks, they should not select that program. By voluntarily participating in classes, programs, and extracurricular activities, students do so at their own risk. General information about University Risk Management policies, insurance coverage, vehicle use policies, and risk management forms can be found at http://www.usu.edu/riskmgmt/.

Mental Health. Mental health is critically important for the success of USU students. As a student, you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce your ability to participate in daily activities. Utah State University provides free services for
students to assist them with addressing these and other concerns. You can learn more about the broad range of confidential mental health services available on campus at Counseling and Psychological Services (CAPS).

Students are also encouraged to download the “SafeUT App” to their smartphones. The SafeUT application is a 24/7 statewide crisis text and tip service that provides real-time crisis intervention to students through texting and a confidential tip program that can help anyone with emotional crises, bullying, relationship problems, mental health, or suicide related issues.

**I have read and understood the course syllabus:**

________________________________________

**Printed Name**

________________________________________

**Signature**

________________________________________

**Date**