CHEM 1225 // GENERAL CHEMISTRY LABORATORY II
SYLLABUS – FALL 2020

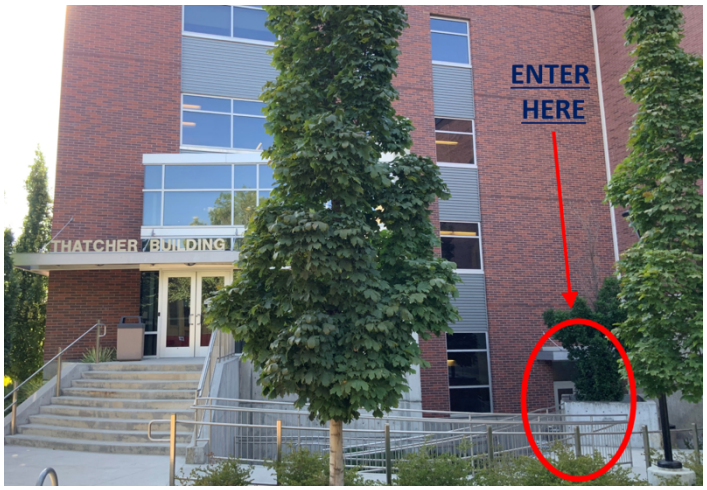
INSTRUCTOR	Dr. Ryan Stolley Office: HEB 4222 Email: ryan.stolley@utah.edu Assistant: Dasha Walker, E-mail: daria.walker@utah.edu
OFFICE HOURS	Digital; Th/Fr, 10a-12p or by appointment. **Zoom Meeting ID:** 934 3878 7202 Your TAs will have office hours digitally and by appointment – details TBA
TEACHING ASSISTANTS	TBA
PREREQUISITES	CHEM 1220 is a co-requisite (or pre-requisite) for CHEM 1225. CHEM 1215 is a prerequisite for the second-semester laboratory course, CHEM 1225. **CHEM 1215 and CHEM 1225 cannot be taken concurrently**.
COURSE DESCRIPTION	CHEM 1225 will build on the basic laboratory techniques taught in 1215 including calorimetry, titrations, electrochemistry. In addition to hands-on experiments you will be developing data collection and analysis techniques, and scientific communication critical for every scientist.
COURSE FORMAT	This class will be a **HYBRID** course consisting of asynchronous lectures, in-person laboratory experiments, and remote digital experiments.
COURSE COMPONENTS	**Lab Lecture Videos**: Lab lectures will be presented via pre-recorded videos. A link to the lab lecture videos can be found on the Home Page for this Canvas Course and in Modules. **In-Person Labs:** Labs are held on the 1st floor of HEB in the room designated for the section in which you are registered. You MUST attend the lab section (and room) for which you registered. You will be assigned a group within your section, Group A or Group B in order to maximize social distancing. This will be done in the first class session upon check in. ***You cannot switch lab sections or group within your section.*** **Digital Labs:** Half of the labs will be conducted as virtual experiments online using Beyond Labz as outlined in the lab schedule below. Lab handouts and materials will be posted on Canvas at least 1 week prior to the week of the scheduled experiment. It is your responsibility to conduct the experiment within the indicated time frame.
IN-PERSON ATTENDANCE	Given the nature of this course, attendance is required and adjustments cannot be granted to allow non-attendance. However, if you need to seek an ADA accommodation to request an exception to this attendance policy due to a disability, please contact the Center for Disability and Access (CDA). CDA will work with us to determine what, if any, ADA accommodations are reasonable and appropriate. Please do not come to class if you are experiencing COVID-19 symptoms. Remember to maintain social distancing at all times.
COVID-19 CONSIDERATIONS	We all want to remain as safe and healthy as possible and we will have extensive protocols to help provide a safe learning environment. In order to be as safe as possible **students must self-report if they test positive for COVID-19** via coronavirus.utah.edu. Please do not come to class if you are experiencing COVID-19 symptoms. Remember to maintain social distancing at all times. Face coverings are required for students and faculty. Based on CDC guidelines, the university requires everyone to wear face

coverings in shared public spaces on campus, including our classroom. As a reminder, when I wear a face covering, I am protecting you. When you wear a face covering, you are protecting me and all of your classmates. If you forget your face covering, I will ask you to leave class to retrieve it. If you repeatedly fail to wear a face covering in class, I will refer you to the Dean of Students for a possible violation of the Student Code. Note that some students may qualify for accommodations through the Americans with Disabilities Act (ADA). If you think you meet these criteria and desire an exception to the face covering policy, contact the Center for Disability and Access (CDA). Accommodations should be obtained prior to the first day of class so that I am notified by CDA of any students who are not required to wear a face covering. Please note that face shields alone are not an acceptable form of face covering unless also worn with a covering or mask for the nose and mouth. Students are reminded to practice appropriate personal hygiene to reduce transmission of the virus. Students are encouraged to wash their hands, use hand sanitizer and clean their desks with wipes, which will be available at classroom entrances and at "sanitizing stations" in multi-use buildings, including Marriott Library. Read more information about the building cleaning schedule on coronavirus.utah.edu.

Due to the nature of a laboratory course there are components which must be conducted in-person. The following safety protocols will be implemented in order to ensure the safety of everyone involved:

- Individual laboratory sections will be split into an A and B group who will alternate weeks in the laboratory space to ensure social distancing. On the out-of-lab weeks students will complete a digital experiment.
- Masks must be worn at all times within the Henry Eyring Building (chemistry); including: labs, hallways, restrooms. You will be asked to leave if you do not have a mask or will not wear it.
- Upon entry into the laboratory, you must change from your personal mask into a **new disposable mask** that will be provided to you each class.
- Within lab spaces – masks, safety glasses, and nitrile gloves must be worn at all times. Gloves, disposable masks, and sanitizer will be available in every laboratory.
- Students will be required to sanitize their workspace before AND after conducting work. A procedure will be provided.
- Admission to the building and laboratories will be scheduled to minimize social contact. Details of the schedule will be posted to canvas. Unauthorized access to the laboratories is forbidden.
- Movement in and out of lab to obtain materials or equipment should be minimized during the activity. All needed materials will be available in the room at the beginning of the period.
- Students must enter and exit ONLY through the East 1st floor entrance of TBBC. See pictures below:

TEXT AND MATERIALS



All experimental procedures will be provided on Canvas, there is no need to purchase a book

Lab Notebook (REQUIRED) – Any laboratory book will be fine. I recommend something solid bound so you don't lose pages.

Beyond Labz Virtual Laboratory Software
Download from: https://www.beyondlabz.com/. Activation code will be provided.

COURSE WEBSITE

Canvas: https://learn-uu.uen.org/ The course will be listed on canvas as: **CHEM 1225-001 Fall 2020**. This general site is maintained by the instructor. Look there to find lecture slides, additional notes all of the experiments, updates and announcements from the instructor.

COMMUNICATION

Important information for the course will regularly be sent out through **weekly Announcements on the Canvas course site**. You are responsible for any information communicated in this way and should check Canvas on a regular basis. If you need to contact me, **email me directly at ryan.stolley@utah.edu**. Please do not send me messages through Canvas as I will not likely receive them. I will respond within 24 hours.

ASSIGNMENTS & POINT BREAKDOWN

1) Academic Integrity Agreement	1 × 1 pt	1
2) Syllabus Quiz	1 × 5 pts	5
3) Safety Quiz	1 x 10 pts	10
4) Pre-Lab Quizzes	8 × 5 pts	40
5) Notebook Check	4 x 5 pts	20

5) Lab Reports	8 × 15 pts	120
6) Lab Etiquette points	4 x 5 pts	20
	Total	**216**

Students who miss (and do not make up) three or more labs or do not turn in all corresponding reports will fail the class. The final grades will be assigned as follows. (1) All %'s will be rounded (i.e. 59.4%=59%, 89.5%=90%), (2) Letter grades will be given approximately as ≥92% - some flavor of A; 91-85% - some flavor of B; 84-78% - some flavor of C; 77-71% - D. I reserve the right to vary the cut-offs depending on the lab section and on the overall class performance.

IMPORTANT: save all your graded reports until the final grades are posted, you checked your final grade and have no plans of disputing it.

Your scores will be available approximately one week after an assignment has been turned in. Please check your grades early and often to ensure that everything has been entered accurately. **IMPORTANT: Please inform the instructor of concerns regarding the grading of lab assignments early in the semester so that the problem can be addressed.**

ACADEMIC INTEGRITY AGREEMENT

You will be **required to sign and upload your signed copy of the Academic Integrity Statement before you can access any modules or materials on Canvas for this course**. This is located in the first Module on Canvas. Due on Canvas by **11:59 PM on Tuesday Sept 1st**.

SYLLABUS QUIZ

Due on Canvas by **11:59 PM on Tuesday Sept 1st**. This quiz is given online through Canvas in the first module and is separate from the pre-lab quizzes described below. It will confirm that you have reviewed the information in this syllabus. You will have **2 attempts** and your highest score will be kept. This **quiz score cannot be dropped**. **(5 pts)**

SAFETY QUIZ

You must watch the Chemistry Lab Safety Video, read the **Safety Guidelines document, and complete the Lab Safety Simulation located under "Safety" in Modules on Canvas**. You will be required to take the online **Safety Quiz** to test your knowledge of the information presented in these materials. Due on Canvas by **11:59 PM on Tuesday Sept. 1st.** This quiz is given online through Canvas and is separate from the pre-lab quizzes described below. It will test your knowledge of the information presented in the Safety Guidelines located in the first module. You will have **2 attempts** and your highest score will be kept. This **quiz score cannot be dropped**. **(5 pts)**

PRE-LAB QUIZZES

You will be required to complete a pre-lab quiz each week you have experiments scheduled for BOTH in-person and digital experiments. These will be online quizzes in Canvas and they must be completed on Canvas by **11:59 PM Wednesdays the same week as the corresponding experiment.** You will have **2 attempts** and your highest score will be kept. These quizzes are open book and test your knowledge on the material that accompanies each experiment. This material is covered in the in the lab lecture videos and your CHEM 1210 textbook. It is highly recommended to watch the Lab Lecture Video before attempting the quiz for your best chance at success. There will be **no makeup for quizzes**. Your best **7 out of 8 quizzes will be used to calculate your grade**. **(5 pts each)**

NOTEBOOK CHECKS

For the In-Person experiments you need to have a laboratory notebook entry that includes the following components: Date, Title of experiment, purpose of experiment, an annotated procedure, and an area reserved for data and observations. This must be completed BEFORE you are able to begin the experiment. See video on Canvas for an example of a laboratory notebook entry.

LAB ETIQUETTE POINTS	You are expected to be respectful, tidy, and safe during In-Person experiments. These points are reserved as a penalty for lack of proper lab etiquette and distribution is reserved for your TA.
LAB REPORTS	**All Lab Reports are located on Canvas.** These must be completed and **uploaded onto Canvas in Assignments** by the corresponding due dates. Lab Reports will be due **via Canvas** by **11:59 pm the day before the following class time from the week the experiment was conducted**. For example: if your lab is Tuesday morning, your report is due by 11:59 pm Wednesday night. Any plots needed to complete the lab report should be submitted along with the report. Plots must be created in excel or a similar program and properly labeled. Both effort and correctness will be considered in the grading of lab reports. Show all work and clearly label everything! Always include units. **Your best 7 out of 8 lab reports will be used to calculate your grade.** If you have **trouble accessing Canvas to upload and submit your any assignments you can always email your work directly to your TA as a pdf attachment immediately.** Only under extreme circumstances (illness, etc.) will lab reports be accepted late. In those cases, only the professor (not your TA) may allow a lab report to be turned in late with appropriate documentation. To upload your lab reports you will be provided with a word.doc of the lab report that can be downloaded and edited. For any calculations, you need to NEATLY write them all on a separate piece of paper, take a picture and upload into the appropriate areas where calculations are required. You can also type your calculations into the word.doc or provide another pdf form showing your calculations. **(15 pts each).**
MAKE-UP LABS	There will be no make-up labs. Under the circumstances, we cannot allow unscheduled entry into labs for make-up. However, you will have the opportunity to drop 1 lab.
ACADEMIC HONESTY	By submitting an assignment, you are representing that it is your own work and that you have followed the rules associated with the assignment. Incidents of academic misconduct (including cheating, plagiarizing, research misconduct, misrepresenting one's work, and/or inappropriately collaborating on an assignment) will be dealt with severely, in accordance with the Student Code (https://regulations.utah.edu/academics/6-400.php) A single instance of academic misconduct may result in a failing grade for the course. Multiple instances of academic misconduct may result in probation, suspension or dismissal from a program, suspension or dismissal from the University, or revocation of a degree or certificate.
DISABILITIES	Any student needing special consideration because of a disability should contact the Center for Disability Services, 162 Olpin Union Building, 581-5020. Contact Professor Stolley if you need help as well. The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability Services.
WELLNESS STATEMENT	Don't let the stress and anxiety of this class get away from you – speak up soon and get the help academically, socially, mentally, and/or physically. Personal concerns such as stress, anxiety, relationship difficulties, depression, cross-cultural differences, etc., can interfere with a student's ability to succeed and thrive at the University of Utah. For helpful resources contact the Center for Student Wellness at www.wellness.utah.edu or 801-581-7776.
SEXUAL MISCONDUCT	Title IX makes it clear that violence and harassment based on sex and gender (which Includes sexual orientation and gender identity/expression) is a civil rights offense

subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).

DISCLAIMER

This syllabus is meant to serve as an outline and guide for our course. Please note that I may modify it with reasonable notice to you. I may also modify the Course Schedule to accommodate the needs of our class. Any changes will be announced in class and posted on Canvas under Announcements.

LABORATORY DETAILS

EMERGENCY

Working in a chemistry laboratory has inherent risks, while we will ensure the safest working conditions possible, if an emergency occurs you should contact your TA immediately and, please **call University Police at (801) 585-2677 or "911" to report emergency and ask for emergency assistance**.

LAB ATTIRE

IMPORTANT! For your own safety, the following are required AT ALL TIMES in lab: Goggles or lab glasses, close-toed shoes, short- or long-sleeved shirt, long pants and a cotton lab coat. YOGA-TYPE PANTS WILL NOT BE ALLOWED. Please tie back long hair. If you come to lab wearing inappropriate clothing, you will be sent home, and forfeit your laboratory time. If a large amount of the lab is missed you will be required to attend a make-up session. We recommend that you keep extra shoes and long pants in your locker.

GLOVE POLICY

Gloves are recommended for all experiments and required when handling chemicals. Free gloves will be available from the stockroom. Gloves should not be worn outside of the lab. Gloves keep chemicals off your skin but can cross-contaminate anything you touch with your gloved hand, i.e. phones, laptop, and doorknobs.

WASH HANDS

All students are REQUIRED to wash their hands as a safety precaution before leaving the laboratory in case they have accidentally encountered any dangerous chemicals. GLOVES ARE ONLY A FIRST LINE OF PROTECTION.

REMOVAL OF CHEMICALS, WASTE, OR EQUIPMENT

It is forbidden to remove ANY chemicals, solvent, chemical waste, or equipment from the organic chemistry teaching laboratories or stockroom. Do not take any chemicals or waste home with you when you leave. This is considered to be theft of property that belongs to the University of Utah. It is especially important that you dispose of solid and liquid chemical waste in the containers in the laboratories. Once a chemical has been placed into a container labeled "WASTE", that material must be stored, transported, and disposed of by the University in accordance with complex Federal regulations that are specified in Title 40 of the Code of Federal Regulations (40 CFR) and in related federal and state regulations and law.

WASTE

Chemical waste is assumed to be hazardous and all waste streams need to be accounted for. Mixing incompatible waste can result in explosion, release of toxic gasses and other hazards. Waste streams will include but are not limited to Aqueous Waste, Organic Waste, Metal Waste, and Solid Waste, and non-hazardous trash. Waste streams will be well indicated and it is your responsibility to be aware of the appropriate waste stream you need to use. **Failure to use the appropriate waste stream can result in your immediate expulsion from class.**

EQUIPMENT

You are accountable for the equipment in your organic chemistry locker. On the first day of lab, your teaching assistant will assign a locker to you. Make sure to put a combination lock on the locker as you may be penalized for the replacement of missing items later during the semester.

Located inside your equipment locker is a breakage card listing the entire contents of the drawer. At check in, verify all items against the list. If anything is missing, the stockroom attendant will replace the item. During the semester, when you lose or break an item, the stockroom attendant will punch the card next to the item name to indicate that they have replaced the item. At the end of the semester, you may be assessed a grade point penalty based upon any breakage or loss in excess of that amount covered by your special course fee. Be careful with your equipment and do not lose the breakage card.

We will also be using common equipment like a glovebox, chromatography columns, and separation funnels. These are particularly sensitive and expensive equipment. Please use caution when using this equipment.

Your laboratory fee is used primarily to cover the cost of chemicals and materials you use during the semester. It also includes a small component for small items in your drawer that are occasionally broken or lost. It does not cover breakage of special, major equipment that is not part of your equipment locker. When carrying out experiments, work carefully and cautiously. Please be extremely careful with all laboratory equipment.

CHECK-OUT

Check-out will occur at the end of the last lab. **You are required to clean all your glassware and review the glassware with your TA. The entire section will also be responsible for cleaning the common areas of the lab.**

PHYSICAL CONSTANTS

Physical constants of chemical compounds (mw, d, etc.) can be found online at chemfinder.com, websites of chemical supply companies such as Millipore-Sigma, Acros Organics, or Strem (inorganic/organometallic compounds), or in hard copies of the Merck Index and the Chemical Rubber Company*Handbook of Chemistry and Physics* in the Science Reserve desk on the fourth floor of the Marriot Library. To find the electronic edition of the CRC go to http://www.lib.utah.edu > research tools > article database > C (or same route for the electronic edition of the Merck).

Laboratory Schedule

CHEM 1225 Lab Schedule – Fall 2020

Week	Group A	Group B
Aug 24th – Aug 25th	***No Exp.*** ***Safety and Syllabus Quizzes, Academic Honesty Statement Due 11:59 PM Tuesday Sept. 1st***	
Aug 31st – Sept 4th	Exp. 1 Thermal Energy and Physical and Chemical Change ***Lab Drawer Check-In*** ***In-Person***	Exp. 2 Colligative Properties ***Virtual***
Sept 7th – Sept 11th	Exp. 2 Colligative Propertie ***Virtual***	Exp. 1 Thermal Energy and Physical and Chemical Change ***In-Person***
Sept 14th – Sept 18th	***No Experiment***	Exp. 3 Heat of combustion and Formation ***Virtual***
Sept 21st – Sept 25th	***NO Experiments***	
Sept 28th – Oct 2nd	Exp. 3 Heat of combustion and Formation ***Virtual***	***No Experiment***
Oct 5th – Oct 9th	Exp.4 Intro to Acids/Bases ***Virtual***	
Oct 12th – Oct 16th	Exp. 5 Reaction Equilibrium ***In-Person***	Exp. 6 Hess's Law ***Virtual***
Oct 19th – Oct 23rd	Exp. 6 Hess's Law ***Virtual***	Exp. 5 Reaction Equilibrium ***In-Person***
Oct 26th – Oct 30th	Exp. 7 Le Chatlier's Principle ***In-Person***	Exp. 8 Intro to Titrations ***Virtual***
Nov 2nd – Nov 6th	Exp. 8 Intro to Titrations ***Virtual***	Exp. 7 Le Chatlier's Principle ***In-Person***
Nov 9th – Nov 13th	Exp. 9 Determination of K_a/K_b ***In-Person*** Drawer Check Out	Exp. 10 Study of Redox Titrations ***Virtual***
Nov 16th – Nov 20th	Exp. 10 Study of Redox Titrations ***Virtual***	Exp. 9 Determination of K_a/K_b ***In-Person*** ***Drawer Check Out***
Nov 30th – Dec 4th	***No Exp. Thanksgiving (Nov 26th)***	
Dec 7th – Dec 11th	***Online Only – No Lab Final***	