# CHY 133 Chemistry for Civil, Electrical and Mechanical Engineers Laboratory

This syllabus is our starting point to describe the course, requirements, and various policies, including safety. We will communicate changes to any of these policies as necessary. The quiz that is part of the first assignment is based on this syllabus. Please fill it out accordingly. If any late breaking policy changes occur, you will be asked to implement them, but for the purpose of taking the accompanying quiz, please rely on the information contained in this document (dated August 2023). If a new syllabus is generated, it will have a date after September 1, 2023.

## Part A (General information about lab course)

**1. Course information**: In addition to the information contained in **this syllabus**, there is additional information contained in the **InterChemNet (ICN) Access Packet**, and **Instructions in each lab experiment** where certain rules and expectations are set out (see set below). Together, this information describes the general chemistry labs, including the rules and policies under which the course operates.

**InterChemNet (ICN) Access Packet:**
(1) Establishing your ICN account,
(2) Downloading first assignment,
(3) Downloading Syllabus,
(4) Filling out the quiz,
(5) Uploading your first assignment,

**This Syllabus**
**Part A (General info about lab course):**
(1) Course information
(2) Description
(3) Schedule
(4) Lab notebook and ICN access
(5) Objectives
(6) Learning outcomes
(7) Grading, Attendance etc.
(8) Laboratory Curriculum & Topics Covered
(9) Some general policies

**Part B Additional Lab Policies & Information**
(1) Lab safety policies,
(2) Other general lab safety policies,
(3) General chemistry lab work basics,
(4) Lab specific academic integrity policies,
(5) Frequently asked questions (FAQs)

**Instructions in each lab experiment:**
(1) Information,
(2) Scientific questions,
(3) Rubrics,
(4) Worksheet (where included)
(5) Designing experiments (where included)
(6) Template for lab reports

**2. Catalog Description:** A one-semester laboratory course in general chemistry designed for civil, mechanical, and electrical engineering majors. Topics in solution chemistry, aqueous equilibria, kinetics materials, and electrochemistry are emphasized. Enrollment is restricted to civil, electrical and mechanical engineering majors. This course does not serve as a prerequisite for other chemistry courses. (Satisfies the General Education Lab in the Basic or Applied Sciences Requirement.) Lab 3. Cr 1. **Co-requisite:** CHY 131.

**3. Lab schedule:** Lab meets once a week for 3 hours.

**4. Lab notebook and ICN access**: A lab notebook is bundled together with an access code in the **Chemistry: InterChemNet® Access Packet**. The bundle is available only at the University of Maine bookstore. Students taking general chemistry lab courses utilize an in-house Interchemnet (ICN) program, which was developed at the University of Maine and allows introductory chemistry students to download lab experiments, upload lab reports and other assignments, and to store instrumental spectral data. The access code is good only for the semester it is used.

**5. Course objectives**:

- To learn about safety procedures (proper disposal of chemicals, PPE (personal protective equipment), SDS and other safety reference materials, chemical and physical hazards associated with laboratory investigations (e.g., spectrometers, pH meters)
- To become proficient with a variety of common chemical analytical techniques including electronic balances, volumetric glassware, preparation of solutions, chemical measurements using various instruments (e.g. spectrometers, pH meters)
- To learn about the scientific process
  - Laboratory work is essential for providing students with a perspective of chemistry as a scientific process of discovery
- To discover the importance of careful laboratory observations and thinking about chemistry
  - Laboratories are primarily hands on but with supervision
- To become proficient in:
  - Recording lab data
  - Communicating and presenting data (Figures, Graphs, Tables, etc.)
  - Analysis of data
  - Making claims that originate from student generated data and analysis
  - Writing lab reports (data presentation, analysis, and conclusions) [approximately 6 lab reports are required]
  - Communicating results with posters [approximately 3 group poster presentations are required]
- To experience some inquiry-driven experiments promoting the connection between macroscopic and submicroscopic thinking. See: (Avargil, Bruce, Amar, & Bruce, 2015)
- To keep a lab notebook to record essential observations and data
- To gain an understanding of how data from instrumental techniques are used in chemical investigations involving chemical reactions and reactivity
- To introduce students to the use of computers and instruments in the investigation of chemistry

**6. Learning outcomes**: On completion of this course you should be able to:

- Understand safe practices in lab
- Engage in a process of scientific inquiry in chemistry
- Be able to identify underlying chemical content through laboratory investigations including such concepts as conservation of mass, limiting reactants, heats of reaction, concentration expressed in moles per liter, dilution, pH, oxidation and reduction, and spectroscopy
- Understand how to keep a lab notebook, record valid data, analyze data, and make a scientific claim using evidence and scientific reasoning

Please note that the objectives listed above are different than classroom activities and topics of examination in CHY 131. While there are underlying chemical concepts that overlap with the class course (e.g. concentration, balanced chemical reactions, limiting reactants) there are many student-centered activities that require the development of different skills and do not follow in sequence the material that is covered in the class. Lecture and lab are designed to strengthen and deepen chemical understanding, using many of the same underlying concepts, but sometimes in different orders. Also, lab experiments always involve generating evidence to support ideas, but in lecture this is not usually covered. **The class and lab course are thus complementary and together they are designed to strengthen and deepen chemical understanding. Also see the information provided in the lab packet.**

**7. Grading, attendance, and completion requirements for CHY 123/133 lab courses:** Lab work is scored by TAs, under the direction of the faculty in charge of the course. While equity in scoring of lab work is a course goal, some differences in how lab work is approached and scored is to be expected. The faculty in charge reserves the right to make adjustments if large differences occur. Historically, students obtaining averages of the course points earned > 90% will receive an A grade (A or A-), > 80% will receive a B- or better (B or B+), etc. The exact cut offs and/or adjustment reflect various factors which can result in course, section, and individual student adjustments. It is also important to note several important aspects of lab course (continues on next page):

Lab Assignments:

- Information about the scoring of individual assignments are posted within the assignment.

Initial Labs:

- During the first few weeks of the semester, your lab report will receive an initial score from an instructor, which you will be able to resubmit it to improve your score if you can take into account deficiencies indicated by your TA. These regrades are done only for the first two labs.

Lab makeups:

- There is some limited access to make-up labs. See the file Making Up a Lab posted on the ICN Resources page. To the extent offered, students will have the ability to make-up and complete an assignment that otherwise would result in a missed assignment. There is no guarantee that any lab can be made up and a shorter time limit is given for make-up labs: you will be given 72 hours after it is made up to submit a lab report, even when there is a Holiday. Labs involving a poster, as a make-up, require submission of a lab report instead.

Lab reports:

- For experiments requiring lab reports, you will generally be given 1 week after the experiment is performed to submit it, even when there is a Holiday (e.g. Holiday breaks).
- If more than 2 lab assignments are missed, for any reason, even if you have excused absences, you will fail the course, regardless of your average. This requirement is in place because of the vital nature that communication has in science. Please have your advisor contact Dr. Bruce at mbruce@maine.edu if there are any extenuating circumstances (e.g. medical) which prevent making up labs. If you miss 3 lab sessions, without making them up, you will fail the course.
- Worked example: if your general chemistry lab course has 11 assignments during the semester, you must complete 9 or more of the assignments to pass the lab course. This means that if more than 2 lab reports are not submitted, you will fail the course, regardless of your average.
- Completion of assignments means timely submission of the lab report. Lab assignments more than two weeks late, in general, will not be scored and will be counted as a missed assignment.

If you decide to drop the CHY 123 or 133:

- For the CHY 123 and CHY 133 lab courses, **if you withdraw from the co-requisite lecture course (CHY 121/131), you must drop the lab.** There are no exceptions anticipated to this rule (see box below for a more detailed explanation).

Lab issues beyond your TA:

- The TAs are under the direction of Dr. Mitchell Bruce. If you have any issues regarding your TA, please contact Dr. Bruce at mbruce@maine.edu.

Getting help:

- If you have difficulties submitting lab work, it is your responsibility to get help and work out a solution with your TA. With the possible exception of the final assignment, lab work is never accepted past the end of classes.

**Why is there a rule to drop lab when dropping the class in CHY 123 or CHY 133?**

The reasons are pretty straight-forward.

(1) The lab and class are co-requisites because the chemistry department faculty believe that when taken together, you will have a much better chance of learning chemistry. You can't take one without the other, so if you drop one, you need to drop the other.

(2) If you drop the class because you're doing poorly, this indicates you probably have a poor understanding of chemistry. Our judgement is that there is also a safety consideration: to be safe in lab, you need to understand chemistry, especially some of the later labs in the semester.

(3) If you have a poor understanding of chemistry, you will probably have difficulty understanding the chemistry in the labs. As an analogy, just because you can follow directions to bake a cake, it doesn't mean you will understand the factors involved in baking a cake, like you would if you were taking a course to become a cook or chef. Likewise, the labs are designed to provide a lot of instruction, but you need to be engaged in the underlying chemistry involved in each lab experiment. If you don't understand the chemistry, the lab won't be very meaningful, and you should retake the lab when you retake the class to understand everything much better.

**8. Laboratory Curriculum and Topics Covered (specimen curriculum)**:

**The information below represents the course experiments used in Fall 2022. The actual sequence of labs and relative points associated with various assignments may be different.**

Please note that the point totals for each week can also be different.

| | |
|---|---|
| Week 1 | ICN Basics, Safety and Policy Quiz. Students are required to study the materials provided and to pass an online quiz (≥ 75%) (total assignment: 50 pts) |
| Week 2 | Bringing Lab into Focus. An introductory lab that explores obtaining valid data, analysis, designing an experiment and making claims in an inquiry-based environment. Students must answer post-lab questions, in order to receive full credit. (total assignment: 75 pts) |
| Week 3 | Polymers and Cross Linking. This lab is designed as a guided learning activity, employing a three step **CORE** learning cycle (Avargil et al., 2015), to help students learn about chemical observations, constructing an understanding about chemical interactions, and designing and performing a student originated experiment. [scale: pre-lab assignment and pre-lab discussion, safe behavior in lab, laboratory work including taking notes, and post-lab discussion: 20%; lab report: 80%] (Lab Report) (total assignment: 100 pts) |
| Week 4 | Writing Lab Reports Workshop. This workshop helps students develop skill in writing lab reports as well as understanding the expectations for lab reports. Students bring in graded lab work as well as a draft lab report. Students must answer questions online in order to receive credit. Post lab assignment also required. (total assignment: 75 pts) |
| Week 5 | Precipitation and Conservation of Mass. This lab is designed as a guided learning activity, employing the three step **CORE** learning cycle (Avargil et al., 2015), to help understand about precipitation reactions and the law of conservation of mass. [scale: pre-lab assignment and pre-lab discussion, safe behavior in lab, laboratory work including taking notes, and post-lab discussion: 20%; lab report: 80%] (Lab Report) (total assignment 100 pts) |
| Week 6 | Limiting Reactants. This lab is designed as a guided learning activity, employing a three step **CORE** learning cycle (Avargil et al., 2015), to understand how to identify a chemical species which is the limiting reactant. [scale: pre-lab assignment and pre-lab discussion, safe behavior in lab, laboratory work including taking notes, and post-lab discussion: 20%; lab report 80%] (Lab Report) (total assignment 100 pts) |
| Week 7 | Copper Cycle. Exploring a series of reactions starting with metallic copper as a reactant and ending with the metallic copper as a product. Students work in groups of 2 to generate data, create a poster, and present it in class to other students. [scale: pre-lab assignment and pre-lab discussion, safe behavior in lab, laboratory work including taking notes, and post-lab discussion: 20%; lab report: PowerPoint presentation: 80%] (In Class Presentation) (total assignment 100 pts) |
| Week 8 | Make-Up Labs (The actual schedule of make-up labs will often be different each semester) |
| Week 9 | Heats of Reaction: applications of thermochemistry. [scale: pre-lab assignment and pre-lab discussion, safe behavior in lab, laboratory work including taking notes, and post-lab discussion: 20%; lab report 80%] (Lab Report) (total assignment 100 pts) |

| | |
|---|---|
| Week 10 | Freezing Point Depression. Exploring a Colligative Property: Freezing Point Depression. [scale: pre-lab assignment and pre-lab discussion, safe behavior in lab, laboratory work including taking notes, and post-lab discussion: 20%; lab report: 80%] (Lab Report Required) |
| Week 11 | Exploring Silver Nano-particles. This experiment explores the world of silver nanoparticles by synthesizing and characterize silver nanoparticles using UV-vis spectroscopy. [scale: pre-lab assignment and pre-lab discussion, safe behavior in lab, laboratory work including taking notes, and post-lab discussion: 20%; lab poster and presentation: 80%] |
| Week 12 | The Iodine Clock Reaction. This lab is designed to determine the rate law for a chemical reaction using the rate of reaction as a function of concentration. [scale: pre-lab assignment and pre-lab discussion, safe behavior in lab, laboratory work including taking notes, and post-lab discussion: 20%; lab report: 80%]. (Lab Report Required) 100 pts. |
| Week 14 | Determination of Thermodynamic Values for the Dissolution of Borax in Water. This lab experimentally determines the following thermodynamic values for the dissolution of Borax: Enthalpy ($\Delta H^0$), Entropy ($\Delta S^0$), and Gibb's Energy ($\Delta G^0$). The lab involves preparing a poster to the class explaining the groups experiment, results, and conclusions. [Prelab Assignment: 10%; Lab poster and presentation: 90%: 100 Pts.] |
| | Make-Up Labs (The actual schedule of make-up labs will often be different each semester) |
| Other Labs | A variety of labs have been used in the curriculum. The list below includes experiments that have been performed in the recent past: Concentrations and Dilutions of Food Dyes, Acid Base Titration, Analysis of Vitamin C in Fruit Juices, and Determination of Copper in Brass. |

## 9. Some general policies

- **Academic Honesty Statement**: Academic honesty is very important. It is dishonest to cheat on exams, to copy term papers, to submit papers written by another person, to fake experimental results, or to copy or reword parts of books or articles into your own papers without appropriately citing the source. Students committing or aiding in any of these violations may be given failing grades for an assignment or for an entire course, at the discretion of the instructor. In addition to any academic action taken by an instructor, these violations are also subject to action under the University of Maine Student Conduct Code. The maximum possible sanction under the student conduct code is dismissal from the University.
- **If you have a disability for which you may be requesting an accommodation, please contact Student Accessibility Services, 121 East Annex, 581-2319, as early as possible in the term.**
- **Course Schedule Disclaimer** (Disruption Clause): In the event of an extended disruption of normal classroom activities, the format for this course may be modified to enable its completion within its programmed time frame.
- **Sexual Discrimination Reporting**: The University of Maine is committed to making campus a safe place for students. Because of this commitment, if you tell a teacher about an experience of **sexual assault, sexual harassment, stalking, relationship abuse (dating violence and domestic violence), sexual misconduct or any form of gender discrimination** involving members of the campus, **your teacher is required to report** this information to the campus Office of Sexual Assault & Violence Prevention or the Office of Equal Opportunity.

**If you want to talk in confidence** to someone about an experience of sexual discrimination, please contact these resources:

For *confidential resources on campus*: **Counseling Center: 207-581-1392** or **Cutler Health Center: at 207-581-4000.**

For *confidential resources off campus*: **Rape Response Services:** 1-800-310-0000 or **Partners in Peace:** 1-800-863-9909.

**Other resources:** The resources listed below can offer support but may have to report the incident to others who can help:

For *support services on campus*: **Office of Sexual Assault & Violence Prevention: 207-581-1406, Office of Community Standards: 207-581-1409, University of Maine Police: 207-581-4040 or 911.** Or see the OSAVP website for a complete list of services at http://www.umaine.edu/osavp/

## Part B: Additional Lab Policies & Information

### 1. Lab safety policies:

**A. Food**

- Eating (including gum), drinking, and smoking are forbidden in the lab.
- Water bottles are not allowed in the lab**.**

**B. Goggles**

- Goggles must be worn, covering your eyes completely, at all times.
- As soon as you arrive in lab, you must put on your goggles.
- If you need to remove them, you should leave the laboratory first.
- We provide goggles that will be acceptable in the lab.
- Most of our labs have an adjacent room, which we call a breakout room. If you arrive after the TA allows students to enter the lab, you must obtain a pair of temporary goggles before you enter the lab. There will be a box of temporary goggles, which you can use to retrieve your goggles at your bench.
- Refusing to wear your goggles will result in a failing grade.

**C. Contact Lenses**

- Contact lenses may not be worn in lab.
- Gases can get trapped under contact lenses.
- If you use contact lenses and cannot use goggles in lab you may be forced to drop the course. Please see Dr. Sarah Bernard (Lab Manager), Room 229 Aubert Hall, or Dr. Mitchell Bruce (Faculty in charge of the general chemistry program), 277 Aubert Hall, if you have any further questions.

**D. Gloves**

- Disposable gloves are available and should be worn whenever handling hazardous chemicals.
- They must be removed before you leave the lab.
- We do not want to spread chemicals about the building.
- We do not want you to contaminate the instrument keyboards.
- After lab, be sure to wash your hands thoroughly.
- Never touch your eyes or face until you are sure that your hands are clean.

**E. Clothing**

- We recommend not wearing very good clothes to lab.
- Sandals and open-toed shoes are not permitted.
- Long hair must be pulled back.
- Aprons are provided.

- Shorts are not allowed.

**F. Health Issues**

- If you are suffering from any illness (major health concern) or are taking medication please inform your instructor and the lab manager, or faculty in charge of the lab course.
- This information could be important in case of an emergency.
- If you develop any medical condition, which might limit your ability to perform experiments in the laboratory, please immediately inform the faculty in charge of the lab course.
- If you are pregnant or become pregnant during the semester, this may limit your ability to perform experiments safely in the laboratory; please contact us immediately to discuss this. This information will be treated confidentially. You can contact Dr. Mitchell Bruce at mbruce@maine.edu to set up an appointment.

**G. Miscellaneous**

- Your TA will teach you about safe techniques and the location of lab safety features in the laboratory, including:
- Proper place to dispose chemicals.
- Proper technique for preparing solutions and dilutions.
- Proper operation of hoods.
- Broken glass disposal.
- Evacuation procedures.
- Emergency contacts (especially important for labs that run until 5 pm or later).
- Importance of cleaning the lab after each use.
- Importance of keeping personal belongings out of the laboratory.
- Safe procedures for handling chemicals and equipment.

**2. <u>Other General Lab Safety Policies:</u>**

**A. Miscellaneous Polices:**

- Store your coat, books and bag somewhere away from the work area and out of heavy traffic areas.
- Use the hoods anytime that you are working with flammable gases, toxic vapors, or noxious odors. For the hoods to work effectively, they must be correctly adjusted. Please see your TA for information about the correct use of the hoods in your lab.
- Keep your area of the lab bench neat and uncluttered. Assume the top is dirty and never lean or sit on the bench. Always wipe off your bench before leaving.
- If you break any glass, notify your Instructor. Be very careful when disposing of the broken glass.

- When heating with a Bunsen burner, several factors must be considered. Keep the flame at a reasonable height, and avoid leaning over the flame. Avoid touching hot glassware, and don't place any hot items directly on the lab bench. If you need to heat something in a test tube, do not point the open end towards yourself or anyone else. While heating a mixture, watch for splattering, and always be ready to remove the flame quickly in case the reaction becomes too vigorous. If something is too hot to pick up leave it alone.

**B. Handling Chemicals:**

- Assume that all chemicals are harmful. Don't touch, eat, or smell any chemical directly.
- Always check the label on the bottle before dispensing a chemical. Make sure that it is the right compound and the appropriate concentration.
- Pour liquids into a small beaker before transferring to a small flask or graduated cylinder to avoid spills.
- Always cap bottles immediately after you are done. While obtaining the chemical, either hold the cap or place it on a clean paper towel.
- To avoid contamination, use a clean spatula or scoop when obtaining solids. Never return excess compound to the bottle, instead, share it with other students.
- Always add the more concentrated solution to the less concentrated one to avoid excessively vigorous reactions. Use a stirring rod to direct the flow of the liquid while pouring.

**C. Disposal of Chemical Waste:**

- All reactants, products, and washings from an experiment can be considered hazardous wastes; therefore, do not throw anything away in the sink unless instructed by your TA.
- Place all liquid waste resulting from the experiment, such as excess reagents, reaction products, rinses, and washings, in their designated liquid waste bottles only. Do not pour anything down the sink.
- Solid waste, used filter paper, or paper towels used to wipe up chemical spills, may be put in a waste container specifically labeled for such products. Do not throw solid waste in the regular wastebaskets.
- Broken glass should be carefully placed in the marked plastic containers.

**D. Accidents or Emergencies:**

- Notify the instructor of the situation as soon as possible. For any personal injuries, you must go to the Cutler Health Center for further care. Even if it seems to be a minor cut or burn, it is important to have it checked, as it is possible that chemicals have entered the wound. Safety equipment, including the eyewash, emergency shower, fire extinguisher, and fire alarm are either in the laboratory or in the vicinity. Please be aware of their location.

- In case of fire, do not attempt to put out the fire unless the instructor is unavailable. If you must use the fire extinguisher, remove the pin, aim the nozzle at the base of the flame, and standing several feet from the flame, squeeze the handle. If the fire is isolated in a beaker or crucible, it may be extinguished by covering the vessel with a watch glass or larger beaker.
- If you catch on fire STOP, DROP, and ROLL. If your hair catches on fire or you spill chemicals on your body then you should use the safety shower. There are no drains in the room. Do not play with the safety equipment; this is grounds for failing the course. If you receive a burn from touching hot equipment, immerse the burned area in cold water and notify the TA.
- For cuts, rinse the wound thoroughly with water, try to remove any broken glass, bandage loosely, and be sure to go to the Health Center.
- If chemicals splash in your eyes, hold eyes open over the eye wash, and push the lever to start the flow of water. You must rinse your eyes for at least ten minutes.
- For chemical spills on your hands, body, or clothes, rinse the affected area well. If it is a large spill covering a major part of your body, use the emergency shower to rinse. Remove contaminated clothing as quickly as possible.
- To clean up spills: most solids can be swept up and disposed of in a designated container. For non-corrosive solutions, paper towels and sponges may be used. For corrosive solutions such as acids or bases, clay absorbent must be used to soak up the spill. The clay absorbent may then be swept up and disposed in the solid waste container.

**3. <u>General Chemistry Lab Work Basics</u>**

**A. Keeping a good lab notebook is required.**

- 5-6 pages of notes for each experiment is normal. With 10 experiments, you should use approximately 50 pages.
- The data and observations from your lab notebook are to be used for writing your lab reports.

**B. Labs have pre-lab work. This includes:**

- Carefully reading the lab procedures.
- Noting safety precautions (e.g. “do in hood”) directly in your lab notebook.
- Completing all pre-lab safety instructions (e.g. MSDS, materials safety data sheets)

**C. You should submit your pre-lab yellow copy to your TA before you start an experiment. Your lab instructor may also inspect your lab notebook at the beginning of lab.**

- You will not be permitted in lab if you fail to complete the section of the pre-lab on safety.
- You will not be permitted to start an experiment, if in the opinion of the instructor, you are not prepared to conduct a lab experiment.

## 4. Academic Integrity Policies

### A. What does the student handbook say about academic integrity?

(http://umaine.edu/handbook/academics/academic-integrity/)

> *Academic honesty is very important. It is dishonest to cheat on exams, to copy term papers or to submit papers written by another person, to "fake" experimental results, or to copy parts of books or articles into your own papers without putting the copied material in quotation marks and clearly indicating its source.*
>
> *Students committing or aiding any of these violations may be given failing grades for an assignment or for an entire course, at the discretion of the instructor. In addition to any academic action taken by an instructor, these violations are also subject to action under the University of Maine Student Conduct Code. The maximum possible sanction under the student conduct code is dismissal from the University*.

### B. Can I copy someone else's work for material to use in my lab reports?

- No, your lab report must reflect your own work and participation. In the case of working with a lab partner, your collected data may be jointly used. All analysis, calculations, and claims should be your own original work. The reason for using joint data should be clearly explained in the submitted lab report. In cases where you would like to use another student's data to compare to your own data (never instead of), please identify the student(s) and clearly mark it as someone else's data. In summary, in all cases, your written explanation, insight, and analysis should reflect your own thoughts and be in your own words. Failure to do this may be considered as evidence for plagiarism.
- **Copying sections of text or portions of another lab report and submitting it, as your own work, can result in failure of the lab course.**
- If you are retaking the course, ALL data must be taken from the current semester. No data, analysis, etc. may be used from prior semesters.

## 5. Frequently Asked Questions About Lab (FAQs)

Please look over the following frequently asked questions. Use the search page feature to find information quickly (command F on macs, control F on PCs). If you have a question that is not answered, please contact Dr. Mitchell Bruce at mbruce@maine.edu

## A. Questions about the start of the term:

### i. I already have an InterChemNet (ICN) code/account and/or a notebook from another semester. Do I have to purchase a new ICN access code and notebook?

Yes. ICN access is granted on a per course/semester basis. In general, if you register for the lab course, you need to obtain a new ICN code and a notebook. An exception is if you took an incomplete in lab and will be completing the lab course in the next semester. See Dr. Sarah Bernard, laboratory manager (229 Aubert Hall).

### ii. When do general chemistry labs start?

The General Chemistry lab courses (CHY 123, CHY 124 and CHY 133) start the first week of classes. During the first week of classes, there will be online assignments that you will need to do. This involves creating your account and completing and submitting answers to a quiz. Students physically attend lab starting in the second week of classes. Look at the lab access packet for specific details.

### iii. I get an error when trying to activate my ICN account, what do I do?

If you are having issues with your ICN barcode, please contact Dr. Sarah Bernard (Lab Manager), sarah.e.bernard@maine.edu.

### iv. Are there recitations during the first week of classes?

Often yes. But the lab and class are sperate classes. Please check with your class instructor.

### v. I was not able to make the first couple of labs, what can I do?

Please contact Dr. Mitchell Bruce. Missing the first couple of assignments may mean you will not be able to pass the course.

## B. Questions about Lab Report Scoring and Due Dates:

### i. Are there due dates for lab reports?

Yes, lab reports are generally due one week after completing your lab work. If you have any questions, ask your lab instructor.

After the due date, lab reports are considered late for a period of two weeks. During the late period, labs up to one week late will have a maximum grade that is 75% of the maximum lab report grade, while labs submitted more than one week late but less than two weeks late will have a maximum grade that is 50% of the maximum lab report grade.

For documented illnesses or other circumstances which prevent lab reports from being submitted, permission to extend lab report deadlines can only be obtained by contacting the lab manager (sarah.e.bernard@maine.edu) or the faculty in charge of the lab course (mbruce@maine.edu). Agreements involving only a lab instructor are not generally considered valid. It is the student's responsibility for contacting the lab manager or the faculty in charge of the lab course.

Labs submitted after the past due period (usually three weeks after a lab has been completed) will be given a grade of zero and will not be graded. A student who fails to submit a lab report on time will still be eligible for the pre-lab and participation credit of the lab experiment. However, missing multiple lab report deadlines may result in grades of zeros being assessed for entire lab experiments.

**C. Questions about Lab Reports:**

**i. Can I copy someone else's work for material to use in my lab reports?**

No, your lab report must reflect your own work and participation. In the case of working with a lab partner, your collected data may be jointly used. You may also create Tables and Figures together, as long as you cite each other in the Figure or Table caption. However, all analysis, calculations, and claims should be your own original work. In cases where you would like to use another student's data to compare to your own data (never instead of), please identify the student(s) and clearly mark it as someone else's data. In summary, in all cases, your written explanation, insight, and analysis should reflect your own thoughts and be in your own words. Failure to do this may be considered as evidence of plagiarism. Copying sections of text or portions of another lab report and submitting it as your own work can result in failure of the lab course.

**D. Questions about retaking, dropping, or changing a class or laboratory section**:

**i. I am retaking the class. Do I need to retake the lab?**

Students who have taken the general chemistry laboratory in the last four years and have earned a grade of C- or better do not need to retake the lab if they retake the class.

**ii. I plan on dropping the class, can I stay in lab?**

See above: Part A (General information about lab course), section 7. Grading, Attendance, and Completion Requirements for CHY 123/133 lab courses.

**iii. I want to change my lab section, what do I do?**

It's possible to change your lab section, since we offer a number of lab sections throughout the week. However, movement between sections depends on available space. Start by visiting the chemistry main office (154 Aubert Hall) and asking the administrative assistant if there are any openings in the section you'd like to move to. Dr. Sarah Bernard, the laboratory manager (229 Aubert Hall), can also help in changing sections, but only after you've first checked with the chemistry main office. If your reason has to do with your TA, you will need to discuss this with Dr. Bruce.

**E. Questions about laboratory safety**:

### i. Can I wear contact lenses in lab?

No, because it is not safe. In lab, there can be very low concentrations of chemical gases that normally are drawn out of the room by fans. At these low concentrations, the gases are safe. However, if you wear contact lenses, since they are (usually) gas permeable, the moist interface between the contact lens and your eye can become an area that concentrates the chemicals – leading to an unsafe condition. There are also additional reasons. For example, even though you wear protective goggles – there is always a chance that a chemical solvent can get into your eyes. If this happens when you are wearing contact lenses, they may prevent you from being able to safely wash the chemical out of your eyes. Hard contact lenses also have safety issues. Thus, our rule is based on safety considerations. Please wear your glasses in lab – it is really for your protection.

### ii. What is the purpose of safety tables in lab reports?

In preparation for lab experiments, a safety Table is often required to be constructed from safety data sheets (SDS). The purpose of constructing a safety Table is to identify important chemical properties that you may need to pay attention in order to be safe in lab.

## F. Questions about missing labs:

### i. What do I do if I need to leave early or arrive late for a lab? Can I just get data from my lab partner to finish my lab?

No. You are expected to complete the lab experiments yourself and be there the entire time. Even if you are asked to pair up and be part of a group, you are required to participate during the entire lab. Many times in a lab, things don't go as planned or are not as straight forward as you first thought. As a rule of thumb, if you miss more than 15 minutes of lab, you should plan to make up the lab at another time. See the FAQ section concerning making up labs.

### ii. I missed or will miss a lab. How can I make it up?

Within ICN is a Resources tab. Download and read the file Making up a Lab Experiment. It is available in your Resources tab of ICN. There will be scheduled weeks for makeup labs during the semester. Please see your TA or the lab manager (sarah.e.bernard@maine.edu) for details.

### iii. Can I always make up a lab?

No. (a) Due to the large number of students enrolled in lab classes, a request to make up a lab during any given lab period is not guaranteed and is at the discretion of the faculty in charge of the lab program, the lab manager: Dr. Sarah Bernard (sarah.e.bernard@maine.edu), and the teaching assistant with whom you will make up your missed lab. (b) If you attempt to make up a lab two or more weeks after it has been given, you need to initiate a discussion with Dr. Sarah Bernard (Lab Manager; sarah.e.bernard@maine.edu) well in advance of the lab period you will make up the lab. This is because you may be required to help prep the lab (i.e. make up solutions or find equipment).

## G. Questions about InterChemNet:

### i. I am not able to download a procedure or submit a lab report. How can I fix this?

There are a variety of reasons that can cause you to have difficulty in downloading lab procedures or submitting your lab reports. It is your responsibility to get help. You should contact your TA and/or the laboratory manager (sarah.e.bernard@maine.edu) for assistance.

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**References:**

Avargil, S., Bruce, M., Amar, F., & Bruce, A. (2015). Students' Understanding of Analogy after a **CORE** (Chemical Observations, Representations, Experimentation) Learning Cycle, General Chemistry Experiment. *Journal of Chemical Education 92*, 1626-1638. doi:DOI: 10.1021/acs.jchemed.5b00230