# CHEM 1150 Chemistry and Society Laboratory

The University of Toledo

College of Natural Sciences and Mathematics

**Instructor**: Dr. Nathaniel Coleman Jr.

**Email**: nathaniel.colemanjr@utoledo.edu

**Office Hours**: Tues, Wed, Thurs: 10:00 am – 12:00 pm online by appointment **Office Location**: BO 2086-H

**Office Phone**: 419-530-2566

**Term**: Spring 2021

**Lab Locations, times, and dates**:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Lab Name** | **Section** | **Room** | **Meeting Time** | **Meeting Day** |
| Chem 1150 | 2 | BO 1095 | 2:00 pm - 3:50 pm | Wednesday |
| Chem 1150 | 4 | BO 1095 | 10:00 am - 11: 50 am | Friday |

 **Credit Hours**: 1

**REQUIRED TEXTS AND ANCILLARY MATERIALS**

**Required Textbook:** Laboratory ManualChemistry in Context, 9th edition, McGraw-Hill,
ISBN 9781307306187

**Required Personal Protective Equipment (PPE):** Approved chemistry safety goggles meeting the ANSI Standard Z87.2003 must be worn by every student during each laboratory. A website to this standard is listed below for further explanation.

<https://www.ishn.com/articles/83741-a-clear-view-of-ansi-z87-1-2003>

Goggles may be purchased at the UT bookstore or from the UT Student ACS chapter which is in room BO 2082. You will need to contact the student ACS or go to their office one at a time to obtain goggles to avoid crowding. The student ACS will not have a booth on the first floor of Wolfe Hall or Bowmann-Oddy due to the pandemic.

Face masks must always be worn. You will not be allowed entry to the lab and will be dismissed from the lab if you do not have a face mask on.

**Required Course Access:**

A working and stable internet connection is required in order to access assignments in this course. We will predominately work through Blackboard. Blackboard is the learning management system that will be used in this class. This is where your TA and myself will post important information relating to the lab and your grades. Blackboard can be accessed through the myUT webpage or by using the website blackboard.utdl.edu.

You will need access to Microsoft Office software for completing work in this class. If you do not own a copy, you can use Open Office or obtain a copy of Microsoft Office from the IT department.

**Required Dress Attire and Etiquette**: (includes updates due to the pandemic)

Every student must abide by the following rules. If you are not properly dressed for lab, you will not be admitted into the lab by the TA and will get a 0 for the lab. I would suggest to always have a backup pair of “lab clothing and masks” in your vehicle or backpack if you forget.

1. Face masks **MUST BE WORN AT ALL TIMES**! The face mask must fit firmly over your face, cover the mouth and nose and should not be touched. Touching a mask can contaminate it with chemicals, or make an ideal environment for the coronavirus to live. If you do not comply to wearing a mask at all times, you will be asked to leave and receive a 0 for the lab.
2. Closed toed shoes must be worn. No shoes that expose any part of the foot are allowed. Cloth based shoes are not advised to be worn. No sandals and socks (for safety and moral reasons…).
3. Gloves should be worn when instructed. Do not touch electronics or door handles when wearing gloves. Do not wear gloves outside of the lab.
4. Full shirts/t-shirts need to be worn. Any shirts that expose the upper torso (like V-neck shirts or blouses that expose cleavage) are not allowed.
5. Full, long length pants must be worn. No shorts, ever. Pants should ideally be slightly loose fitting but not baggy. Avoid wearing “leggings” or spandex type of fabrics since there is very little protection between your body and the fabric. These materials burn in a matter of seconds versus jeans that take several minutes to burn for example.
6. Make sure that long hair is pinned up.
7. Avoid wearing contacts to lab. I understand that contact technology has improved greatly for “breathability” but chemicals will still get stuck under them and cause excruciating pain. You have been warned.
8. Avoid wearing expensive clothing to lab since you will spill chemicals. I am not liable to replace your damaged clothing. I suggest devoting some older clothes for lab and have a backup pair in your backpack just for lab.
9. Disruptive behavior is not tolerated in lab. This can be a major safety hazard. You will be asked to leave and receive a 0 for the lab.
10. All backpacks and coats should be stored in the correct receptacles. Receptacles will need to be wiped down with an alcohol solution before leaving the lab.
11. No food or drink in the lab, ever. Also do not taste chemicals.
12. Avoid applying makeup in the lab since chemical vapor can dissolve into these materials.
13. Avoid performing your “own” experiments in the lab. If done, you will receive a 0 for the lab and asked to leave.
14. Do not breathe in chemical vapors. Reactions should be done in the hood. Keep hood sashes down.
15. Discard chemical waste in the correct containers when needed.
16. Be familiar with the emergency locations in the room (ex. first aid kit, eye shower, body shower, fire extinguisher, phone).
17. Report any unwanted chemical reactions, spills on yourself or surfaces, fires, or glass breakage to your TA immediately.
18. Do not work alone in the lab. If no one is in the lab, do not enter it.
19. No electronic devices except for a calculator should be present during lab.
20. Wash your hands before and after handling chemicals. Residues can be present on your hands that may end up in your food later.

**Optional Equipment**: A USB flash drive may be useful for taking your data home.

 **COURSE/CATALOG DESCRIPTION**

This course will have experiments that cover topics in CHEM 1110 lectures. Approved chemistry safety goggles meeting the American National Standard Z87.1-1968 must be worn by every student during every laboratory class meeting. Three hours of laboratory per week.

**COURSE OVERVIEW**

CHEM 1150is the appropriate lab course to go with CHEM 1110. This sequence is intended for chemistry non-majors, students who require a physical science towards their degree or that are interested in learning the base knowledge of chemistry.

**PREREQUISITES AND COREQUISITES**

The prerequisite for CHEM 1150 is CHEM 1100 to be taken concurrently.

 **TEACHING STRATEGIES**

The lab is designed to explore experiments that relate to the content learned during lecture. Teaching assistants (TAs) will predominately run the labs and the lab coordinator (Dr. Coleman) will make visits throughout the semester, not to police the TAs and students, but to show that I exist and am also here to help you along the way. You will be responsible for reading through the lab manual to get an idea of how the lab will be done and be prepared to commence the lab. Each lab will require completion of **“pre-lab questions”**. These questions need to be completed and submitted online before entry and starting the lab. Once the lab is completed, you will need to complete the **“post-lab questions”** and turn in your data/calculations online before beginning of the next lab section. Combining the pre-lab, post-lab, and data/calculations will complete the **“Lab-Report”** for the lab.

IMPORTANT NOTE: Due to the current pandemic, all parts of the lab report will need to be submitted online via assignment dropboxes. You will need to fill in the Microsoft Word documents, save them for your records, and then upload copies online.

### LAB ATTENDANCE POLICY (includes updates due to the pandemic)

Attendance is mandatory unless you have concerns about the pandemic. You are expected to be on time and ready for lab at the beginning of each lab period. You will not be allowed into the lab if you are substantially late (15 minutes or more), or if your pre-lab is incomplete. If you miss an experiment, you may make it up only by attending another lab section during the week (**Chem 1150 only meets on Wednesdays and Fridays**) that particular experiment is scheduled **if the lab coordinator and TA are notified prior to going to another section.** It is up to you to make these arrangements with your TA, either in person or via e-mail. There are no lab periods designated as make-up labs. If you need to attend another lab section during the same week as your regularly scheduled lab section, send me an e-mail at nathaniel.colemanjr@utoledo.edu addressing the need to reschedule your lab. If you know in advance you will be absent due to travel, job conflicts, etc., send an e-mail as soon as you can to maximize your chances of getting into another section. It will not always be possible to do so due to lab size limitations.

VIOLATIONS OF THE SAFETY POLICY

If you fail to follow the safety rules and policies, the following actions will be made:

1. The first instance of failure to comply with the safety rules and/or policies will result in an immediate ten-point deduction for that laboratory exercise and possible 0 for the lab plus removal from the lab.
2. A second violation will result in removal from the laboratory and a 0 being given for the lab.
3. If there are further violations, the instructor can assign a failing grade for the course.

### EXCUSED ABSENCE POLICY (includes updates due to the pandemic)

You must fill out and submit an **Excused Absence Request (EAR)** form for each excused absence within two weeks of your return to campus. EAR forms are located on Blackboard in the additional handouts section.

Should you miss a lab for a legitimate reason, submit an EAR form and supporting documentation to the instructor via email. Do not give the documentation to your TA. If you submit an EAR form, you are exempted from doing any work for the missed lab. This will also reduce your maximum points in the class. You also cannot take back a signed EAR form once it is submitted.

Excused absences will be granted when school-related academic or athletic activities, medical problems, or other similar emergencies cause you to be absent. Absences due to work, class schedule conflicts or family vacations will not be excused. No more than **two excused absences** **per student per semester will be granted.** Excusedabsence requests that are received more than four weeks after the absence and those with no supporting documentation will not be approved.

IMPORTANT NOTE: If you are concerned about attending lab due to the pandemic, you must inform me, Dr. Coleman, about this. Special remote learning will be needed in this case so the sooner I know the better.

**COMMUNICATION GUIDELINES**As your instructor, I am here to help, and will do my best to respond to email within 24 to 48 hours during business days. Weekends are very variable, but I am usually on my pc. Students are expected to check their UT email account and blackboard frequently for important course information. TAs should inform you on their email availability, but they should also respond at least once to your emails within a 24 to 48 hour time frame.

### LATE WORK POLICY

The pre-lab should be turned in before coming to lab, and the remaining documents must be submitted before the due date of each lab report. Each lab report has a 1 week due date time. We will need to eliminate paper transactions to prevent spreading of the coronavirus. **Any work that is uploaded after the due date will lose 10 points. If you upload any work after 12 hours have passed after the due date, the work will not be accepted even if it is correct.** In the event of an excused absence, the previous lab’s work should be submitted online as normal. If the experiment is made up in another section that week and is approved by the instructor, make sure to still complete and submit your work in Blackboard. You do not need to fill out an EAR form if you made up the lab in another section.

### ACADEMIC DISHONESTY

Academic Dishonesty is defined by the university's policy as specified in the university’s catalog. The rules of academic honesty will be strictly enforced. Academic dishonesty includes cheating by copying from any other student — past or present. All work submitted must be the work of the individual submitting it. Academic dishonesty will result in a score of zero for an assignment and/or lab and can further result in a failing grade in the course that cannot be removed from the student’s transcript. You will be required to print out an **Academic Honesty Statement** which is located on Blackboard, sign it, and submit the statement online.

**LAB STRUCTURE** (includes updates due to the pandemic)

The weekly lab is set up as follows:

1. You should have turned in your pre-lab online before coming to lab. Your TA will not allow you to enter if this is not turned in on time. When in the hallway avoid clustering and make sure to stay 6 feet away from other students if possible.
2. Upon entry to the lab, you must be properly attired, including safety goggles and masks.
3. Place all backpacks, coats and other items not needed for lab in the appropriate storage.
4. The TA will go over the background, safety, experiment procedures, and hazards of the lab in a brief PowerPoint presentation. During this time, make sure that you try to maximize your distance from each student. There should only be 12 maximum students in the labs now due to the pandemic.
5. Depending on the lab, you will work individually to complete the lab steps and have the remainder of the lab time to do so. If you finish early, and have your TA verify that you are done with a signature, then you need to wipe down your lab hood and cubby hold with alcohol cleaner, and then you are allowed to leave.
6. Complete data in black or blue ink only and neatly cross-out or black-out errors. Avoid using white-out. You can take pictures of lab pages and submit either a **.jpg, .png, .gif, Microsoft Word document, or pdf file** online in the appropriate only assignment.
7. Remember to only remove goggles when leaving the lab and discard gloves in the lab only. Do not wear gloves outside of the lab and do not touch door handles or keyboards with gloves on. Do not touch or remove your mask.

SUBMITTING LAB REPORTS ONLINE

As mentioned before, you will need to submit all lab report documents (pre-lab, data/calculations/graphs, post-lab) online. No paper assignments will be collected by your TA since we are trying to reduce any sort of transmission of the coronavirus from surfaces. In order to do this, you will need to go to Blackboard and access the “Online Lab Submission” tab on the left side column. Once you click on this tab, you will see several “assignments”. Upload all of the corresponding pages to the correct assignment. Only upload image or document files supported on PC (sorry no Apple software files like .pages or iphone files like .heic). The acceptable files extensions are .jpg, .png, .gif, Microsoft Word documents, or pdf file. Mac and iphone users will need to convert their pictures to .pdf documents.

COURSE GRADES

Your grade will be based on your lab reports and assignments. Lab report grades include pre-lab questions, data sheets, graphs, if any, and post-laboratory questions, which include the analysis of the data collected. Labs reports are worth 100 points each.

Students who have a grade of D or below will have a mid-term grade reported during the 5-8th week of the semester. This grade notification does not appear on your transcript, but the purpose of this is to notify you of your academic standing in the class. Attendance is also recorded during the midterm grading period. This reporting is done in compliance with state and federal and federal laws regarding financial aid disbursement. Please note that if you are not attending class it could impact your financial aid (scholarships, grants, loans or Federal Work Study). If you decide to not attend this class (or any other class you have registered for), you must formally withdraw (drop) from the course.

The course point breakdown is the following:

|  |  |  |
| --- | --- | --- |
| **Assignment** | **Point Value** | **% of Total Points** |
| Safety Quiz | 20 points | 1.74 % |
| Academic Honesty Form | 10 points | 0.87 % |
| Lab reports (11 labs, 100 points each) | 1100 points | 95.65% |
| Lab Assessment/Behavior | 20 points | 1.74 %  |

### Total points possible 1150 points

In order to complete this course with a grade of C or higher, you will need to achieve at least 73% of the total points for the course or 839.5 points.

You can monitor your grade throughout the semester via the online grade book in Blackboard and from the Lab Skills gradebook. These are two separate gradebooks that will be merged when final grades are due. It is your responsibility to ensure every entry made by your TA is correct. The deadline to report any error to the instructor of the course is **5 pm of the Friday April 16th, 2021**. At the end of the semester a final grade will appear in Blackboard. You will have two days to notify your instructor via e-mail of an error in your final grade. Once the grades are uploaded to the official UT grade system, grade changes can no longer be done quickly.

### GRADING SCALE

The following is a general guideline.

##### 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% - 67%

 D 66% - 63% D- 62% - 60% F < 60 %

Course drop and withdrawal procedures have been set by the University of Toledo. **The deadline for dropping is February 2nd, 2021. You may *withdraw* from the course and receive a grade of W. The deadline for withdrawal is March 26th, 2021. W’s do not affect your GPA.**

You can also find these deadlines on the UT website, under the Academic Calendar and on the Registrar’s page for deadlines.

ACADEMIC POLICIES

As a student at The University of Toledo you should be familiar with the policies that govern the institution’s academic processes, for example, academic dishonesty, enrollment status, grades and grading. Please read through the undergraduate academic policies. Students are expected to attend every class meeting of courses in which they are registered. Please read the missed class policy.

Undergraduate Policies: http://www.utoledo.edu/policies/academic/undergraduate/

Graduate Policies: http://www.utoledo.edu/policies/academic/graduate/

### UNIVERSITY POLICIES

The University is an equal opportunity educational institution. Please read The University’s Policy Statement on Nondiscrimination on the Basis of Disability Americans with Disability Act Compliance. Students can find this policy along with other university policies listed by audience on the University Policy webpage http://www.utoledo.edu/policies/audience.html/#students.

### ACADEMIC ACCOMMODATIONS (includes updates due to the pandemic)

The University of Toledo embraces the inclusion of students with disabilities. We are committed to ensuring equal opportunity and seamless access for full participation in all courses. For students who have an accommodations memo from Student Disability Services, I invite you to correspond with me as soon as possible so that we can communicate confidentially about implementing accommodations in this course. For students who have not established affiliation with Student Disability Services and are experiencing disability access barriers or are interested in a referral to healthcare resources for a potential disability or would like information regarding eligibility for academic accommodations, please contact the Student Disability Services Office http://www.utoledo.edu/offices/student-disability-services/ by calling 419.530.4981 or sending an email to StudentDisability@utoledo.edu.

IMPORTANT NOTE: The Memorial Field House testing center will not be operational during the pandemic. The final exam in this course will be administered online and accommodations for time will be given.

STUDENT SUPPORT SERVICES

**Academic Support Services:** Please follow this link to view a comprehensive list of Student Academic and Support Services (http://www.utoledo.edu/studentaffairs/departments.html) available to you as a student

**Course scheduling assistance:** Chemistry Department Secretary, Ms. Samples, is in Room BO 2022, telephone 419-530-2698. If you have further questions or if you need assistance, please talk to her. She takes care of all scheduling changes.

**Chemistry Help Center, Room BO 2043:** IMPORTANT NOTE: During a normal face-to-face semester, this is the room in which TAs hold their scheduled office hours. This room will not be used during the pandemic and your TA should have virtual office hours through a video (or audio) conference.

**Tutoring Support:** Tutoring support is available through the **Learning Enhancement Center** located in the Carlson Library.

**Safety and health services for UT students**: Please use the following link to view a comprehensive list (<http://www.utoledo.edu/offices/provost/utc/docs/CampusHealthSafetyContacts.pdf>) of services available to you as a student. If you need to have COVID-19 testing, you can call The University of Toledo Medical Center (UTMC) at 419 383-4545.

**Instructor Office Hours:** IMPORTANT NOTE: Normally, these are the times when you can stop by my office with questions about the course material, grades, and any concerns with the course. However during the pandemic, my office hours will be online and by appointment only. My office hour times and location are listed at the top of the syllabus (page 1), are on my schedule in Black Board, and are posted on the outside of my office. If you have a scheduling conflict with all of the listed times, we can schedule a different time to meet.

STUDENT LEARNING OUTCOMES (SLO)

Upon successful completion of this course, you should be able to:

1. Recognize and properly use standard laboratory glassware and analytical equipment
2. Safely work with hazardous substances and reactive chemical systems
3. Perform common laboratory techniques involving solids and liquids
4. Understand and use the scientific method
5. Analyze data and observations to draft a scientifically valid conclusion
6. Use calculations necessary to determine percent content of an unknown
7. Identify an unknown based upon observations
8. Communicate the results of an experiment
9. Communicate ideas related to science in spoken and written word
10. Understand the influence of modern science of our global and diverse culture and society
11. Use the concepts of a good scientific method to evaluate issues

**EXPERIMENT SCHEDULE**
The following table will give you a general idea of our pace throughout the course. Experiments will occur on the dates indicated below. If any adjustments need to made, either I or your TA will announce these.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **Experiment** | **Lecture Related Chapter in Text** | **Notes** | **SLO’s** |
| Jan 19 - 23 | Check inSafety Video (watch at home) | N/A | Watch the safety video at home, complete the safety quiz, and upload your results online to the assignment drop box. | 1 |
| Jan 26 - 29 | Experiment 1: Gases in Air | Chapter 2: The air we breathe | Last day to drop: 2-2-2021 | 1, 3, 4, 5 |
| Feb 2 -5 | Experiment 2: Chemistry of Sunscreens | Chapter 3: Radiation from the sun |  | 1-5 |
| Feb 9 - 12 | Experiment 3: Color and Light | Chapter 3: Radiation from the sun |  | 1-5, 8, 9 |
| Feb 16 - 19 | Experiment 4: Molar Ratios | Chapter 4: Climate change |  | 1-5,6, 8, 9 |
| Feb 23 - 26 | **Experiment 5: Calorimetry** (not in lab manual) | Chapter 5: Energy from combustion | This is a new lab that is not in the lab manual. Access and print this out from Blackboard. | 1-5, 8 - 11 |
| Mar 2 - 5 | Experiment 6: Electrochemistry | Chapter 6: Energy from alternative sources and Chapter 7: Energy storage |  | 1-5, 8 - 11 |
| Mar 9 - 12 | Experiment 7: Acid Reactions | Chapter 8: Water everywhere | Sections that meet on March 10th will need to use student data to complete the lab due to the instructional break on this day. | 1-5 |
| Mar 16 - 19 | Experiment 8: Investigating Solubility | Chapter 8: Water everywhere |  | 1-5 |
| Mar 23 - 26 | Experiment 9: Identifying Unknown Plastics | Chapter 9: The world of polymers and plastics | Last day to withdraw: 10-23-20 | 1-5, 7 - 9 |
| Mar 30 - Apr 2 | Experiment 10: Measuring sugar content in beverages | Chapter 10: Brewing and chewing |  | 1-5, 7 - 9 |
| Apr 6 - Apr 9 | Experiment 11: Drug Money, Clean upCheck out | Chapter 11: Nutrition andChapter 12: Health and Medicine |  | 1-5, 7 - 9 |