CHEM 1290 General Chemistry 2 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 and by appointment
Office Location: BO 2086-H
Office Phone: 419-530-2566
Term: Fall 2019
Lab Locations, times, and dates: see the end of the syllabus
Credit Hours: 1

REQUIRED TEXTS AND ANCILLARY MATERIALS


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.


Goggles may be purchased at the UT bookstore or from the UT Student ACS chapter which is in room BO 2082.

Required Course Access: 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.

Required Dress Attire and Etiquette: 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” in your vehicle or backpack if you forget.

1. 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…).
2. Gloves should be worn when instructed. Do not wear gloves outside of the lab.
3. 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.
4. 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.
5. Make sure that long hair is pinned up.
6. 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.

7. 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.

8. 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.

9. All backpacks and coats should be stored in the correct receptacles.

10. No food or drink in the lab, ever. Also do not taste chemicals.

11. Avoid applying makeup in the lab since chemical vapor can dissolve into these materials.

12. Avoid performing your “own” experiments in the lab. If done, you will receive a 0 for the lab and asked to leave.

13. Do not breathe in chemical vapors. Reactions should be done in the hood.

14. Discard chemical waste in the correct containers when needed.

15. Be familiar with the emergency locations in the room (ex. first aid kit, eye shower, body shower, fire extinguisher, phone).

16. Report any unwanted chemical reactions, spills on yourself or surfaces, fires, or glass breakage to your TA immediately.

17. Do not work alone in the lab. If no one is in the lab, do not enter it.

18. No electronic devices except for a calculator should be present during lab.

19. 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 covers experiments based on topics covered in CHEM 1240 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 1280 is the appropriate lab course to go with CHEM 1230. This sequence is intended for chemistry 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 1290 is CHEM 1240 (may be taken concurrently) with a minimum grade of C and CHEM 1280 with a minimum grade of C.

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 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 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 at the beginning of the next lab section. Combining the pre-lab, post-lab, and data will complete the “Lab-Report” for the lab.

LAB ATTENDANCE POLICY

Attendance is mandatory. 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 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 same week 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 an e-mail to 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

You must fill out and submit an Excused Absence Request (EAR) form for each absence within two weeks of your return to campus.

Should you miss a lab, submit an EAR form and supporting documentation to the instructor via the department secretary, Ms. Samples in BO 2022. Do not give the documentation to your TA. The lab report and any other papers that were due that day are to be attached to the EAR form.

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, schedule conflicts or family vacations will not be excused. No more than two excused absences per student per semester will be granted. Excused absence requests that are received more than four weeks after the absence and those with no supporting documentation will not be approved.

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**

All assignments are due upon entry to the lab. Late work will not be accepted. If necessary, you may submit papers that were due at the beginning of lab to your TA’s mailbox via the department secretary in BO 2022 no later than 5 pm of the same day for a **10 point deduction**; evening classes have until 12 pm the following day to submit their papers. This policy is to be used only as an exception, for example, papers were left at home. If late submission becomes a regular occurrence, the submitted papers will be deemed late and will not be accepted for grading. In the event of an excused absence, the previous lab’s work should be submitted with the Excused Absence Request form. If the experiment is made up in another section that week and is approved by the instructor, make sure to inform the TA of that section that you are in a different lab section and the work needs to be given to your original TA.

**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, sign it and submit the statement to your TA.

**LAB STRUCTURE**

The weekly lab is set up as follows:

1. Upon entry to the lab, you must be properly attired, including safety goggles.

2. Make sure to have the pre-lab for the current lab and the post-lab questions for the previous lab ready to turn in. You cannot enter if your pre-lab is incomplete. Please do not wait to the last minute here.

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.

5. Depending on the lab, you will work in a group or 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 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.

7. Once you are done with the experiment, clean your area and the instrumentation area if needed.

8. 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.
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 80 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: 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:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Point Value</th>
<th>% of Total Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Quiz</td>
<td>20 points</td>
<td>1.96 %</td>
</tr>
<tr>
<td>Academic Honesty Form</td>
<td>10 points</td>
<td>0.98 %</td>
</tr>
<tr>
<td>Lab Equipment Sheet</td>
<td>7 points</td>
<td>0.69 %</td>
</tr>
<tr>
<td>Lab reports (10 labs, 80 points each)</td>
<td>800 points</td>
<td>78.43 %</td>
</tr>
<tr>
<td>Lab Practical (comprehensive)</td>
<td>160 points</td>
<td>15.69 %</td>
</tr>
<tr>
<td>Lab Assessment/Behavior</td>
<td>23 points</td>
<td>2.25 %</td>
</tr>
</tbody>
</table>

Total points possible                1020 points

In order to complete this course with a grade of C or higher, you will need to achieve at least 64% of the total points for the course or 652.8 points.

Lab assessment will be determined by your TA throughout the semester. It is based on several factors including: following the procedure, being prepared for class, turning in work on time, correct attire, non-disruptive behavior.

You can monitor your grade throughout the semester via the online grade book in Blackboard. 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 before finals week. 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:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100% - 88%</td>
</tr>
<tr>
<td>A-</td>
<td>87% - 85%</td>
</tr>
<tr>
<td>B+</td>
<td>84% - 81%</td>
</tr>
<tr>
<td>B</td>
<td>80% - 77%</td>
</tr>
<tr>
<td>B-</td>
<td>76% - 73%</td>
</tr>
<tr>
<td>C+</td>
<td>72% - 69%</td>
</tr>
<tr>
<td>C</td>
<td>70% - 64%</td>
</tr>
<tr>
<td>C-</td>
<td>63% - 60%</td>
</tr>
<tr>
<td>D+</td>
<td>59% - 57%</td>
</tr>
<tr>
<td>D</td>
<td>56% - 53%</td>
</tr>
<tr>
<td>D-</td>
<td>52% - 50%</td>
</tr>
<tr>
<td>F</td>
<td>&lt; 50 %</td>
</tr>
</tbody>
</table>

Course drop and withdrawal procedures have been set by the University of Toledo. **The deadline for dropping online is September 9th. You may withdraw from the course and receive a grade of W. The deadline for withdrawal online is November 1st. W’s do not affect your GPA.**

The experiment schedule lists the drop and withdrawal deadlines for the course as well. You can also find these deadlines on the UT website, under the Academic Calendar.

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

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.
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: This is the room in which TAs hold their scheduled office hours. Your TA should have hours set up and should discuss them with you during lab.

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.

Instructor Office Hours: These are the times when you can stop by my office (no appointment needed) with questions about the course material, grades, and any concerns with the course. 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 good scientific method to evaluate issues
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. Some acronyms used in the table: Pre-lab questions (PrLQ), Post-lab questions (PoLQ)

<table>
<thead>
<tr>
<th>Date</th>
<th>Experiment</th>
<th>Assignment Due Next Lab</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug 27-30</td>
<td>Check in, Safety Video</td>
<td>Measurements Lab PrLQ</td>
<td></td>
</tr>
<tr>
<td>Sept 3-6</td>
<td>Density, Accuracy, Precision, and Graphing</td>
<td>Freezing Point Depression PrLQ, Measurements Lab PoLQ</td>
<td></td>
</tr>
<tr>
<td>Sept 10-13</td>
<td>Molar mass Determination by Freezing Point Depression</td>
<td>Copper in Brass Lab PrLQ, Freezing Point Depression PoLQ</td>
<td>Last day to drop Sept 9</td>
</tr>
<tr>
<td>Sept 17-20</td>
<td>Spectrophotometric Determination of Copper in Brass</td>
<td>Kinetics of a Chemical Reaction PrLQ</td>
<td></td>
</tr>
<tr>
<td>Sept 24-27</td>
<td>Studying the Kinetics of a Chemical Reaction</td>
<td>Crystal Violet Lab PrLQ, Kinetics of a Chemical Reaction PoLQ</td>
<td></td>
</tr>
<tr>
<td>Oct 1-4</td>
<td>Determining the Rate Law for the Crystal Violet-Hydroxide Ion Reaction</td>
<td>Vitamin C Lab PrLQ, Crystal Violet Lab PoLQ</td>
<td></td>
</tr>
<tr>
<td>Oct 8-11</td>
<td><strong>NO LAB - FALL BREAK</strong></td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Oct 15-18</td>
<td>Determining Ascorbic Acid in Vitamin C Tablets</td>
<td>Identifying a Weak Acid Lab PrLQ, Vitamin C Lab PoLQ</td>
<td></td>
</tr>
<tr>
<td>Oct 22-25</td>
<td>Identifying a Weak Acid by Titrimetry</td>
<td>Buffer Lab PrLQ, Identifying a Weak Acid Lab PoLQ</td>
<td></td>
</tr>
<tr>
<td>Oct 29-Nov 1</td>
<td>Studying the pH of a Strong Acid, Weak Acid, Salt, and Buffer Solutions</td>
<td>Qualitative Analysis of Cations PrLQ, Buffer Lab PoLQ</td>
<td>Last day to withdraw Nov 1</td>
</tr>
<tr>
<td>Nov 5-8</td>
<td>Qualitative Analysis of Cations</td>
<td><strong>Electrochemistry PrLQ</strong>, Qualitative Analysis of Cations PoLQ</td>
<td></td>
</tr>
<tr>
<td>Nov 12-15</td>
<td><strong>Electrochemistry (NEW LAB!!)</strong></td>
<td><strong>Electrochemistry PoLQ</strong></td>
<td></td>
</tr>
<tr>
<td>Nov 19-22</td>
<td>Clean up and Checkout</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Nov 26-29</td>
<td><strong>NO LAB - THANKSGIVING BREAK</strong></td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Dec 4-6</td>
<td>Lab Practical</td>
<td>N/A</td>
<td></td>
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</tbody>
</table>
**Lab Locations, times, and dates**

Below are the lab sections for the Fall 2019 semester. Make sure that you write down your section, room, lab time and day.

<table>
<thead>
<tr>
<th>Section</th>
<th>Room</th>
<th>Meeting Time</th>
<th>Meeting Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 1290</td>
<td>2</td>
<td>BO 1097</td>
<td>11:30 am - 2:20 pm</td>
</tr>
<tr>
<td>Chem 1290</td>
<td>3</td>
<td>BO 1097</td>
<td>2:30 pm - 5:20 pm</td>
</tr>
<tr>
<td>Chem 1290</td>
<td>4</td>
<td>BO 1097</td>
<td>5:45 pm - 8:35 pm</td>
</tr>
<tr>
<td>Chem 1290</td>
<td>5</td>
<td>BO 1097</td>
<td>8:30 am - 11:20 am</td>
</tr>
<tr>
<td>Chem 1290</td>
<td>6</td>
<td>BO 1097</td>
<td>11:30 am - 2:20 pm</td>
</tr>
<tr>
<td>Chem 1290</td>
<td>7</td>
<td>BO 1097</td>
<td>2:30 pm - 5:20 pm</td>
</tr>
<tr>
<td>Chem 1290</td>
<td>8</td>
<td>BO 1097</td>
<td>5:45 pm - 8:35 pm</td>
</tr>
</tbody>
</table>