**REINHARDT UNIVERSITY**

**CHE 183 010 – general CHEMISTRY II LAB, spring ‘24**

**Professor:** Dr. Fred A. Fortunato **Lectures:** 9-9:50 am, M/W/F (Dobbs 101)

**Office:** Dobbs 126 **Study Sessions:** By appointment

**E-mail:**  faf@reinhardt.edu **Labs:** 12:30-3:15 pm, M (Dobbs 101/128)

**Phone:** 770-720-5594 12:30-3:15 pm, T (Dobbs 101/128)

**Office Hours:** As posted (in Dobbs 126)

**Overview:**

This syllabus is an extension of the CHE 182 General Chemistry II lecture syllabus. It provides specific information related to the laboratory portion of the course. Additional course information can be found in the full CHE 182 syllabus.

**Required Lab Materials:**

* Zumdahl, Steven S., Zumdahl, Susan. A., & DeCoste, Donald J. *Chemistry.* Tenth Edition. Cengage Learning, 2018. ISBN: 978-1-305-95740-4, or e-book.
* Labster lab simulation software. Access will be provided by the professor and paid for using the students’ lab fees. Students will need to register (professor will provide instructions).
* A scientific calculator that does not store text information (for quizzes and exams). Some examples are: TI-30XIIS, TI-30Xa, CasioFx-300ESPLS2, Mr. Pen-scientific calculator. These can be purchased at Walmart, Target, or Amazon. If you are not sure whether your calculator is acceptable, please see the professor. Note, high-end graphing calculators like the TI-84 or equivalent are not acceptable, neither are mobile phones nor “smart” watches.
* Your operable Reinhardt University e-mail account. This must be working and checked frequently. Your account is not operable if your mailbox is full!
* Students are expected to have adequate computing capabilities and web (internet) access.

**Course Description:**

The chemistry laboratory is a corequisite to CHE 182, General Chemistry II lecture, and provides students the experience in conducting experiments that allows them to make scientific observations, measurements, and conclusions. Good laboratory techniques along with lab safety are stressed. *Corequisite: CHE 182.*

**Course Objectives:**

Students in CHE 183 should be able to:

1. Develop safe laboratory habits.
2. Use appropriate laboratory techniques to make observations supporting chemical laws and theories.
3. Practice understanding chemistry experiments by reading the lab manual.
4. Practice working with others to accomplish a common objective.
5. Appreciate the difficulty of getting reliable data.

**Lab Instructors:**

The professor and perhaps a student a lab instructor will be conducting this course. The student lab instructor should always be treated respectfully as the authority within this lab setting. Lab students who fail to follow the directions of the lab instructor will be given grade penalties.

**Lab Requirements and Procedures:**

* Read this syllabus and keep it handy for easy reference. **You’re expected to know what it contains**.
* Chemistry lab this semester will be a little different compared to the previous semester in that we will be doing experiments in a virtual environment along with three, in-lab experiments. The Labster lab simulation package will simulate a laboratory and you will have experimental procedures specified.
* You must have your own access to the Labster lab simulation package. Access will be provided by your professor along with a representative lab outline for your reference. Further lab instructions will also be given as needed.
* There may be worksheets given out at times along with supplementary lectures during some lab sessions.
* Students should carefully and completely read the lab experiment before attending that lab period. Experiments will be released the Friday before the week the experiment is to be assigned. Students will have up to one week to complete the experiment and turn in the report. The professor and lab instructors will be available during lab time for consultation. So, it is imperative that you attend the lab classes even if you expect to complete the experiment on your own.
* **All students are to follow the directions given by the lab instructors.**
* Safe lab practices are crucial. Inappropriate behavior may result in dismissal from the lab with a zero grade for that day.
* For in-lab experiments, appropriate lab attire is mandatory. If you are not suitably attired, you will be dismissed from the lab to correct the issue(s). Lab work missed as a result will be graded accordingly.
* You must bring to each lab paper, pencil, pen (optional), a calculator, and a spiral notebook for note taking. If you have a laptop computer that would be helpful for you to conduct the experiment during the lab session. Mobile phone/watch calculators are **not** acceptable.
* The use of mobile phones, PDAs, picture phones, Google glass, wearable computers, other imaging/gaming devices, or other e-mail/ text messaging devices is not permitted in the lab without the instructor’s approval. **Silence them.**
* E-mail is to be the principal means of communication between faculty, staff, administration, and students. Types of communication may include assignments, registration materials, announcements, etc. It is the responsibility of each student to check their Reinhardt University e-mail account regularly (daily is recommended), and the student will be held accountable for all official communication of administrative policies, faculty or lab instructor instructions, and campus information sent via the Reinhardt University e-mail system. Also check Canvas for class announcements.
* If class or school is cancelled, the lab activity for that day will be rescheduled and communicated either in lecture or via e-mail.
* Unless otherwise directed by the lab instructors, lab reports are due at the beginning of the next lab.

**Attendance:**

Regular, punctual attendance is essential for doing well in chemistry lab. You are required to attend all scheduled lab sessions. If you are going to miss class due to university commitments, illness, or an emergency that arises, please notify the professor **prior** to the class. Excused absences, those approved by the professor, will qualify the student to make up the lab at a later date. All non-excused absences will result in a zero (0) for that day. Other notes regarding attendance are as follows:

* Arriving late (after the introductory discussion has started) may result in a loss of 1 point for that lab.
* Leaving early without permission from the lab instructor may result in a loss of 1 point for that lab.
* Being absent or late does not relieve the student of the responsibility of any due assignments.
* All absences from class (including school-sponsored activities, ministry trips, etc.) are recorded and counted as absences. They may be excused, but still count as absences. Additional make-up labs may be scheduled as lab instructors’ schedules permit.
* **The last day to withdraw from this course with a “W” is March 12. If you withdraw from CHE 182, the lecture portion, you must also withdraw from the lab.**

**Health Considerations:**

Please follow safe practices regarding distancing and wear appropriate face covering, as delineated by the university or the professor, to protect the health of yourself and others.

**Service/Comfort Animals:**

For the safety of the service/comfort animal and the students, the animals are not permitted into the Chemistry laboratory (Dobbs 128) at any time. In the lab, the animals may inadvertently contact chemicals (such as from the floor due to spills) that could pose a harm to the animal. In addition, the presence of an animal in the lab also poses a safety risk to the other students in that the animal could create a tripping hazard or block access to various parts of the lab. Lab sessions held in a classroom setting (e.g., Dobbs 100 or 101) will be treated as lecture rooms from the standpoint of service/comfort animals (see the CHE 182 course syllabus for details).

**Lab Attire:**

When lab meets in Dobbs 100 or 101, lab attire is the same as what is acceptable for a lecture class.

For those in-lab experiments, we will meet in the Chemistry lab (Dobbs 128) and different restrictions apply. In those cases, each student should wear to lab closed shoes which also cover the top of the foot, socks which cover the ankle, and pants which meet the top of the shoe. The following clothes should **NOT** be worn: sandals, flip-flops, flats, shorts, tanks, skirts, dresses, or Capri pants. Those students with long hair must have their hair completely pulled back so as not to get tangled with experiments or possibly burned. Do not wear shirts or sweaters with baggy sleeves which could get in the way of lab work. Contact lenses are **forbidden** while working in the lab. Approved lab safety eyewear will be provided.

**Evaluation Procedures:**

This course is scheduled to meet fourteen (14) times during the semester. Students are required to attend each scheduled session, unless otherwise approved by the professor. Points for each lab activity are delineated on the proposed lab schedule. Lab grading of experiments will be based on two parts. The first part will be a summary of the data obtained and any calculations required, followed by a series of questions which are based on the experiment you conducted along with your results. The second part consists of virtual lab problems via Labster. Grades for both parts will be posted in the Canvas gradebook showing the total points obtained for each part based on those specified in the lab schedule. Lab worksheets have various point values and due dates delineated on the schedule. The total lab score for the semester is 120 points. The lab points, which constitute ≈ 24% of the total CHE 182 grade, will be added to your lecture scores to compute the final course average.

Points for each lab activity are delineated on the lab schedule. Additional notes regarding grading of the lab reports are as follows:

* Lab reports or assignments not turned in on time, without prior approval from the professor, will lose 1 point for the first day (24 hours) late, an additional 2 points each of the next three days (24 -72 additional hours) late. If an assignment is more than 4 days (96 hours) past due, it will not be graded and a score of zero will be awarded for the assignment. This does not apply to Labster exercises.
* Points may be deducted for failure to complete any experiment properly (obtaining no product, the incorrect product, very impure product, etc.). This usually results from improper lab practices, or not following directions carefully.
* Note, once a Labster simulation closes, points for the incomplete (or missing) assignment will be prorated based on the number of points actually achieved.

**Proposed Schedule:**

Below is a preliminary schedule for this course.

|  |  |  |
| --- | --- | --- |
| Date | **Regular Lab Activity** | **Labster Activity** |
| Jan 8 & 9 | IntroductionCHE 180 Review & Quiz assigned **(Due 9:00 am Wednesday, January 17)** [15 Quiz points] |  |
| **Jan 15 & 16** | **No Lab – Holiday** |  |
| Jan 22 & 23 |  | **Exp #1** (2 parts): (1) Purification and Separation of a Mixture (4.17 pts), (2) Heating Curves and Phase Changes (5.83 pts) **[due: noon 1/31]** |
| Jan 29 & 30 |  | **Exp #2** (2 parts): (1) Solution Preparation (3.33 pts), (2) Reaction Kinetics (6.67 pts) **[due: noon 2/7]** |
| Feb 5 & 6 | Worksheet #1 [Chs 10-13] (10 points)  | **Exp #3**: Equilibrium (5 points) **[due: noon 2/14]** |
| Feb 12 & 13 | **Exp. #4 (in lab)**: Reaction Kinetics (10 points) **[due 2/21]** |  |
| Feb 19 & 20 | Review Exam #1 | **Exp #5** (2 parts): (1) Acids & Bases in Everyday Substances (5.86 pts), (2) Advanced Acids & Bases (4.14 pts) **[due: noon 2/28]** |
| Feb 26 & 27 |  | **Exp #6** (2 parts): (1) Experimental Design (7.69 pts), (2) Titration-Neutralize an Acid Lake Contamination (2.31 pts) **[due: noon 3/13]** |
| **Mar 4 & 5** | **No Lab – Spring Break**  |  |
| Mar 11 & 12 | **Exp. #7 (in lab)**: Standardization of NaOH Solution (10 points) **[due 3/20]** |  |
| Mar 18 & 19 | Worksheet #2 [Chs 14-17] (10 points) |  |
| Mar 25 & 26 | **Exp. #8 (in lab)**: Percent of Acetic Acid in Vinegar (10 points) **[due 4/3]** |  |
| Apr 1 & 2 | Review Exam #2 | **Exp. #9** (2 parts): (1) Introduction to Radioactive Decay (6.25 pts), (2) Nuclear Chemistry (3.75 pts) **[due: noon 4/10]** |
| Apr 8 & 9 |  | **Exp. #10** (2 parts): (1) Organic Chemistry Introduction (6.19 pts), (2) Functional Groups and Basic Chemical Tests (3.81 points) **[due: noon 4/17]** |
| Apr 15 & 16 |  | **Exp. #11**: Synthesis of Aspirin (5 points)  **[due: noon 4/23]** |
| Apr 22 & 23 | TBD  |  |

 Revised: January 8, 2024

Lab simulation assignments will be taken from the Labster virtual lab package for this course. Points for each are as indicated. Each lab will consist of review questions (adjusted to the point value for the experiment, either fill-in or multiple choice). In-lab experiments will be conducted in the Chemistry lab (Dobbs 128) and will require written reports. Each of the assignments will be due on the date indicated. **Total lab score is 120 points.**

Note: This schedule may be revised during the semester, as needed.