

# CHEM 111

## Experimental Chemistry

### Sample Syllabus

### Description

CHEM 111 is an introductory chemistry laboratory experience that gives students the opportunity to put into practice the essential principles utilized in a professional chemistry laboratory regarding topics relevant to CHEM 110.

### Objectives

Upon successful completion of this course students will be able to:

- Conduct experiments on topics relevant to CHEM 110 in a manner that is safe, economical, and environmentally friendly
- Perform fundamental laboratory manipulations
- Make accurate experimental observations
- Accurately record and interpret data
- Recognize sources of error in experiments and estimate their importance
- Plan and produce useful reports of laboratory work that meet acceptable standards of completeness, accuracy, clarity, and neatness

### Materials

- [PSU Experimental Chemistry Kit](#)
- LabArchives (email sent to you)
- Scientific Calculator (non-programmable)

## Course Schedule

Week	Topic(s)
1	Course Overview & Safety
2	"Finding Scientific Information" Module
3	Uncertainty and Measurement & Faster, Plop, Plop, Fizz, Fizz
4	Atomic Emission
5	Physical and Chemical Changes
6	Determination of Water Hardness by Titration
7	Bonding and properties of water
8	Work week for project proposal
9	No Investigation Midterm Exam 1 (Weeks 1-7)
10	Fundamentals of Chromatography
11	Investigating Chemical Reactions
12	Single replacement reactions: Stoich and percent yield
13	Gases
14	Enthalpy of a Reaction Using Hess's Law
15	No Investigation Midterm Exam 2 (Weeks 10-14)

## Laboratory Investigations (75%)

Each week, there will be an investigation to complete. All of the information will be provided on LabArchives. The first two weeks are considered a "dry" lab because there will not be an explicit experiment

conducted. Most laboratory investigations will be worth 70 points and consist of three parts: notebook pages, post-lab worksheet, and a quiz. Each part is explained in more detail below. The deadline to submit all parts of the investigation for the week will be on Tuesday of the following week.

## **Notebook Pages (10 points)**

There will be a dedicated page in LabArchives for collecting raw data and recording procedural notes.

## **Post-lab Worksheet (50 points)**

After completing the investigation and collecting the data, you will complete a worksheet where you will analyze the data. Analysis may consist of performing calculations with the data, making graphs, and assessing accuracy and/or precision of results.

## **Quiz (10 points)**

The quiz associated with each laboratory investigation can be completed at anytime during the week on Canvas. You will have 20-minutes and up to two attempts (only the highest score will be kept). The quizzes will test your conceptual understanding of the investigation.

All parts of the lab investigations will be due on Tuesdays by 11:59 pm and should be handed in on time. If they are not handed in on time, substantial penalties will apply (–10% for each day that an assignment is late). Material that is more than one week late will not be accepted.

## **Midterm Exams (10% each)**

There will be two (2) midterm exams given over the course of the semester. Exams are scheduled on the following dates and times and will require you to come to campus. If you are not able to make the exam at that time, you must make arrangements with instructor for an alternate exam time earlier in the day.

Exams will focus on material covered since the last exam; however, you are still responsible for information presented previously. The exams will consist of short answer questions and open-ended problems. Some

questions may be multiple choice. Stay tuned to announcements for details on the format.

## Participation (5%)

We will have a class forum/chatroom for asking and answering questions about the course using Piazza (accessed in Canvas). You can ask and answer questions here, which will be monitored by the TA and instructor. Please direct your questions here before e-mailing. You will be able to ask and answer anonymously if you wish. The beauty of Piazza is that the entire class can benefit from the questions and answers. More information on enrolling and etiquette for using will be provided during the semester. You must make 10 posts (questions or answers) anytime before October 19 to earn all 25 participation points for the exam period. You will earn a proportionately lower score for fewer than 10 posts. Make an addition 10 posts (questions or answers) anytime between October 20 and December 7 to earn the remaining 25 points.

## Grading

The final grade is calculated based on scores in each assignment category (details follow).

Activity	Points
Laboratory Investigations	750
Midterm Exams(2)	100 each / 200 total
Participation	50
Total	1000

## Grade Scale

Letter Grade	% of Course Points
A	93-100%
A-	90-92%
B+	91-87%
B	83-90%
B-	80-82%
C+	77-79%
C	69-76%
D	57-68%
F	< 56%

## Make-up Exams

As required by University regulations, students who miss an exam with a valid excuse (family emergency, illness, university-scheduled activities, etc.) will be given an opportunity to make-up the exam. Prearranged make ups can be taken earlier in the exam week. In order to be eligible for the make-up exam ALL of the following conditions MUST be fulfilled:

1. The missed exam is the result of a University-approved excuse. Per Senate Policy 42-27, "Requests for missing class or an evaluative event due to reasons that are based on false claims may be considered violations of the policy on Academic Integrity"
2. Instructor must be notified in writing (email is preferred) within 24 hours of the missed exam.
3. You must schedule a make up for the exam within 1 week of the original exam date.

## Regrades and Grade Corrections

If after an exam or laboratory investigation is returned there is a question concerning the grading of the assignment, the material should be

resubmitted to instructor for full reconsideration. Under no circumstances will anyone else make changes to the grades. All requests for re-grading are to be made in writing according to the procedure outlined below and must be submitted to instructor within one week of receiving the feedback. Note that the entire assignment will be regraded and this may result in a lower grade. Late re-grades will not be accepted and will not be considered at the end of the semester.

The written request for a re-grade must be on a separate piece of paper. **DO NOT ALTER THE ORIGINAL SUBMISSION.** The re-grade must include an explanation as to why you feel the problem should be re-graded. I will not discuss with you whether or not you should submit a re-grade. "Brief comparisons" which consist of "I think I deserve more points" or "the answer is correct because my friend had the same answer" are NOT reconsidered.

Note: Addition errors made during point totaling are not considered re-grades and may be given to the instructor for correction at any time during the semester.

## **Academic Integrity**

Academic integrity is the pursuit of scholarly activity in an open, honest and responsible manner. Academic integrity is a basic guiding principle for all academic activity at The Pennsylvania State University, and all members of the University community are expected to act in accordance with this principle. Consistent with this expectation, the University's Code of Conduct states that all students should act with personal integrity, respect other students' dignity, rights and property, and help create and maintain an environment in which all can succeed through the fruits of their efforts.

Academic integrity includes a commitment by all members of the University community not to engage in or tolerate acts of falsification, misrepresentation or deception. Such acts of dishonesty violate the fundamental ethical principles of the University community and compromise the worth of work completed by others.

## **Accommodating Disabilities**

Penn State welcomes students with disabilities into the University's educational programs. Every Penn State campus has an office for students with disabilities. The [Student Disability Resources \(SDR\) website](#) provides contact information for every Penn State campus . For further information, please visit [Student Disability Resources website](#).

In order to receive consideration for reasonable accommodations, you must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: [See documentation guidelines](#) . If the documentation supports your request for reasonable accommodations, your campus disability services office will provide you with an accommodation letter. Please share this letter with your instructors and discuss the accommodations with them as early as possible. You must follow this process for every semester that you request accommodations.

## **Counseling and Psychological Services**

Many students at Penn State face personal challenges or have psychological needs that may interfere with their academic progress, social development, or emotional wellbeing. The university offers a variety of confidential services to help you through difficult times, including individual and group counseling, crisis intervention, consultations, online chats, and mental health screenings. These services are provided by staff who welcome all students and embrace a philosophy respectful of clients' cultural and religious backgrounds, and sensitive to differences in race, ability, gender identity and sexual orientation.

- [Counseling and Psychological Services at University Park \(CAPS\)](#): 814-863-0395
- [Counseling and Psychological Services at Commonwealth Campuses](#)
- Penn State Crisis Line (Available 24 hrs, 7 days a week): 877-229-6400
- Crisis Text Line (Available 24 hrs, 7 days a week): Text LIONS to 741741

## **Educational Equity / Report Bias**

Penn State takes great pride to foster a diverse and inclusive environment for students, faculty, and staff. Acts of intolerance, discrimination, or harassment due to age, ancestry, color, disability, gender, gender identity, national origin, race, religious belief, sexual orientation, or veteran status are not tolerated and can be reported through Educational Equity via the [Report Bias website](#).