



Syllabus: CHM 2045L Chemistry 1 Laboratory Fall 2024

Welcome to Chemistry 1! This course is part of the **STEM Core**, a set of critical and foundational courses consisting of mathematics, chemistry, physics, programming, and STEM applications. These courses build the skills and conceptual understanding you need to succeed in all degree programs. Data show that completing these courses in your freshman (first) year is the best path towards a high-powered STEM degree and an on-time graduation. Courses in the STEM Core share similar formats and expectations. The faculty across the STEM Core work together to help you succeed. Make these courses a priority!

Academic Integrity: Students are expected to adhere to the highest standards of academic integrity. Violations of academic integrity, particularly cheating and plagiarism, undermine the central mission of the university and negatively impact the value of Florida Poly degrees. Suspected violations will be fully investigated, possibly resulting in an academic integrity hearing and sanctions against the accused student. More information about Florida Poly's academic integrity policies and procedures can be found here: <https://floridapoly.edu/wp-content/uploads/2017/07/FPU-5.005-Academic-Integrity-7.29.14.pdf#search=academic%20integrity>

Course Information

- **Course Number and Title:** CHM 2045L Chemistry 1 Laboratory
- **Credit Hours:** 1 credit hours
- **Academic Term:** Fall 2024

Instructor Information

- **Instructor:** Dr. Tracy Olin
- **Email:** tolin@floridapoly.edu
- **Office Location:** BARC 2262
- **Office Hours:** In-person MWF 11:00 am -12:00 pm or by appointment

Course Delivery and Course Description

- **Delivery Mode:** This course will be held face-to-face (in-person) at the rooms, days and times given below.
 - Section 1 and 2:** BARC-2207 and 2209 **Tuesday** 8:00 am – 9:50 am
 - Section 3 and 4:** BARC-2207 and 2209 **Tuesday** 10:00 am – 11:50 am
 - Section 5 and 6:** BARC-2207 and 2209 **Tuesday** 1:00 pm – 2:50 pm
 - Section 7 and 8:** BARC-2207 and 2209 **Tuesday** 3:00 pm – 4:50 pm
 - Section 9 and 10:** BARC-2207 and 2209 **Wednesday** 10:00 am – 11:50 am
 - Section 11 and 12:** BARC-2207 and 2209 **Wednesday** 1:00 pm – 2:50 pm
 - Section 13 and 14:** BARC-2207 and 2209 **Thursday** 8:00 am – 9:50 am
 - Section 15 and 16:** BARC-2207 and 2209 **Thursday** 10:00 am – 11:50 am
 - Section 17 and 18:** BARC-2207 and 2209 **Friday** 10:00 am – 11:50 am

Official Catalog Course Description: Students will participate in laboratory experiments designed to reflect the topics presented in CHM 2045.

Gordon Rule (6A-10.030): Yes: This course meets communication/writing-intensive requirements (W)

Co-Requisite: CHM 2045 – Chemistry 1

Required Equipment and Material:

- Safety goggles and a lab coat (you can purchase these through the bookstore or via the links provided on the course Canvas site).
- Access to the experiment files on Canvas and a printer.
 - Each week you must print the procedure pages and datasheets for the correct experiment from the Canvas and bring them to lab. You may use a laptop or tablet for data collection in the lab but be aware that they are subject to the conditions of the chemistry lab, which tend to not non-ideal for electronics.
 - All pre-lab, data and post-lab pages will be uploaded to Canvas for grading. You will need to upload them as a pdf file. If you are unsure how to convert photo files to pdf, please see Canvas for suggested tutorials.
- All STEM Core courses will require the [Texas Instruments TI-30XIIS calculator](#) or a very similar calculator (must be approved by instructor). No other type of calculator is allowed on exams. It is advised that you obtain this calculator and become familiar with it prior to the first exam. It is also strongly recommended that you bring it to class daily, as there may be in-class work that requires the use of a calculator.
- Access to the University Email System

Communication: Florida Polytechnic University email is the official method of communication for the University. Students are required to check their email frequently. The subject of your emails must start with “CHM 2045L Section X” followed by the topic. Failure to provide the correct subject will result in ignoring the email. Any email received from an address other than the one with the floridapoly.edu domain will not be replied to. Emails will typically be answered within 24-48 hours, Monday-Friday.

Course Objectives and Outcomes

Course Objectives:

- Design and perform a chemistry experiment safely and systematically.
- Understand and follow laboratory work practices.
- Demonstrate ability to generate systematic data.
- Achieve professional success to analyze experimental data correctly.
- Ability to articulate laboratory report based experimental outcomes using professional English, technical details, and scientific explanation.

Course Learning Outcomes:

- Ability to understand the process of a chemical change.
- Ability to demonstrate safe laboratory skills.
- Learning-based ability to apply problem solving skills to perform any experiment which involves processing.
- Ability to engage constructively and work in a team.
- Be able to communicate and articulate a laboratory process report.
- Ability to utilize scientific methodology including quantitative data analysis and interpretation.
- Develop and conduct appropriate experimentation, analyze, and interpret data, and use engineering judgment to draw conclusions.
- An ability to execute process-based learning to improve engineering processes involving surface science, materials science, analytics science, environmental science, and technology of sensors and biomedical applications.

- **Alignment with Program Outcomes:**

Students will demonstrate an understanding of the scientific method and will be able to:

- Use the scientific method to explain and evaluate scientific observation, hypothesis, and experimentation.
- Apply appropriate scientific methods in problem solving.

Course Learning Outcome	Learning Level (e.g., Bloom's, Anderson/ Krathwohl; Rogers/Hatfield (ABET Assessment Example))	Program Learning Outcome (ABET, GenEd, Other)
1. Demonstrate safe laboratory skills.	Remember	4-f
2. Apply problem solving skills to laboratory exercises.	Remember Understand Apply	6-b, 6-k
3. Effectively communicate in written laboratory reports.	Analyze Execute Evaluate Create	3-g
4. Utilize scientific methodology including quantitative data analysis and interpretation.	Remember Understand Analyze Execute Evaluate Create	1-a

Schedule of Experiments – Tentative

Week	Title of Experiment	Lab # in Manual	Assignment (due at the beginning of class)
Week 1 8/20 – 8/23	Syllabus and check-in		*Get access to the online lab manual and lab coat and goggles
Week 2 8/26 – 8/30	Mandatory Safety Training and Online Quiz	Exp 0	- Complete the online Safety Training and Safety Quiz prior to the start of lab on Lab 3 *** Students may not work in the laboratory until they have viewed the Lab Safety video and passed ($\geq 80\%$) the Safety Quiz***
Week 3 9/3 – 9/6	Glassware and Uncertainty	Experiment 1	-Bring the Signed copy of the Lab Safety agreement and submit it in person (hard copy) before the start of the lab -Submit the pre-lab for the Glassware and uncertainty experiment before the start of the lab
Week 4 9/9 – 9/13	Density of Solids and Liquids (LAB REPORT)	Experiment 2	-Submit Data/post-lab for Glassware and uncertainty experiment by 11:59 PM -Submit the pre-lab for Density experiment before the start of the lab
Week 5 9/16 – 9/20	Lab Report Help Session		-Submit the Initial Full lab Report for peer review TBD
Week 6 9/23 – 9/27	Chemical and Physical Changes	Experiment 3	-Complete Peer Reviews for the Density experiment by TBD (as per the due date of the section) -Submit Full lab Report and Data Sheets for Density of Solids and Liquids experiment by 11:59 PM -Submit the pre-lab for the Chemical and Physical Changes experiment before the start of the lab
Week 7 9/30 – 10/4	Limiting Reagent and Theoretical Yield (LAB REPORT)	Experiment 4	-Submit Data/post-lab for Physical and Chemical Changes experiment by 11:59 PM -Submit the pre-lab for Determining the Limiting Reagent experiment before the start of the lab
Week 8 10/7 – 10/11	Reactions & Solubility	Experiment 5	-Submit Full lab Report and Data Sheets for the Limiting Reagent experiment by 11:59 PM -Submit the pre-lab Reactions & Solubility experiment before the start of the lab
Week 9 10/14 – 10/18	Acid-Base Titration	Experiment 6	-Submit Data/post-lab for Reactions & Solubility experiment by 11:59 PM -Submit the pre-lab for the Acid-Base Titration experiment before the lab
Week 10 10/21 – 10/25	Determination of Molar Mass using Gas Laws	Experiment 7	-Submit Data/post-lab for Titration experiment by 11:59 PM -Submit the pre-lab for the Determination of Molar Mass experiment before the start of the lab

Week 11 10/28 – 11/1	Calorimetry and Hess's Law (Determination of Enthalpy)	Experiment 8	-Submit Data/post-lab for Determination of Molar Mass experiment by 11:59 PM -Submit the pre-lab for the Calorimetry experiment before the start of the lab
Week 12 11/4 – 11/8	Molecular Geometry- VSEPR Theory (or) Atomic Spectra	Experiment 9	- Submit Data/post-lab the Calorimetry experiment by 11:59 PM -Submit the pre-lab for VSEPR experiment before the start of the lab
Week 13 11/11 – 11/15	Veteran's Day, No Lab this week		
Week 14 11/18 – 11/22	Final Exam for Lab (on Canvas)		-Submit Data/post-lab for VSEPR experiment by 11:59 PM
Week 15 11/25 – 11/29	Thanksgiving Break, No Lab this week		
Week 16 12/2 – 12/4	No Lab this week		

Course Policies

Please Note: Changes in this syllabus, assignments, exams dates, etc. may be modified as deemed appropriate. All changes will be announced in class and/or in Canvas Announcements.

Late Work/Make-up work

Pre-lab submissions that are after the start of the lab period are considered late. If they are submitted within 24 hours, 30% of the total grade may be awarded (e.g. you could get a maximum of 3/10 on that pre-lab assignment). After a prelab is more than 24 hours late, no credit will be given. Late lab reports or post-lab work will have a 10% grade penalty per meeting day they are late (e.g., if your report is 4 meeting days late, the maximum you can earn is 60% for that lab report). Anything submitted after the start of the lab period when they were due is considered a meeting day late. After four meeting days have passed, a score of zero will be given for the respective lab due to non-submission.

Make-up work may be given for excused absences and will be dealt with on a case-by-case basis. If you miss a lab day because you are participating in a college-sponsored activity, inform your instructor before the day to be missed and provide them with documentation.

Participation

Students are expected to participate in the classroom experience. The use of earbuds/headphones during class is specifically not allowed and students who engage in this behavior may be asked to leave the class for the day (noting exceptions for authorized accommodations). In addition, students who routinely do not bring materials to class that are required for participation, will not be given credit for class attendance and participation, and if this becomes a pattern of behavior, may be asked to leave the class for the day. Persistent problems with participation may result in a code of conduct referral.

Grading Scale

Grade	A	B+	B	B-	C+	C	D	F
Percentage	90%	87%	83%	80%	77%	70%	60%	< 60%
GPA	4.0	3.33	3.0	2.67	2.33	2.0	1.0	0.0

Grades on Canvas

- Grades will be posted to Canvas for reference only, and students should make sure they are recorded correctly. However, there is no guarantee that the percentages or projected grades provided in Canvas are correct. The instructor will calculate final percentages and will determine final grades regardless of Canvas calculations.
- If you wish to dispute a score for an assignment or exam, you must describe the nature of the dispute in writing and communicate it through an email no later than one week after the due date/posting the scores of the assignment or the exam. Scores outside of this window will be considered final.
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Assignment/Evaluation Methods

Assignment/Evaluation Methods:

Attendance	5%
Lab Experiments (Best 6 of 7, 10% each)	60%
Lab Reports (2 at 10% each)	20%
Final Exam	15%
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Total	100%

- **Attendance:** Students in face-to-face courses are expected to attend all of their scheduled University classes and to satisfy all academic objectives.
 - Attendance will be taken at the beginning of each class period using A+ Attendance through Canvas. It is the student's responsibility to be sure to enter the code each lecture period. If the system is not working properly, let the professor know before or after class so your presence can be documented. Recall, attendance is part of the overall grade in this course. You will lose part of the 5% attendance grade for each unexcused absence.
 - For university-approved absences (see [Student Attendance Policy](#)), it is the student's responsibility to contact the instructor promptly, or in advance when possible. Excused absences will be handled on a case-by-case basis.
 - Laboratory meets only 11 times in the summer A semester. Make it a priority to be present for all lab periods. The point of the laboratory is for you to learn how to perform measurements and observations using standard chemistry apparatus and instrumentation. The laboratory is the only place where you can learn this. As such, attendance in the laboratory is mandatory and will count towards part of your overall grade.
 - The instructor will not repeatedly enter your attendance because you forgot to enter it. Please be sure to do this EVERY CLASS PERIOD. After ONE manual entry by the instructor, you will be counted as absent.
 - Note: Falsifying attendance for yourself or for another student is an act of academic dishonesty and is considered a violation of the university's academic integrity policy.
 - Exceptions to any attendance requirements may be made on a case-by-case basis.
- **Lab Experiments and Reports: All course assignments and reports will be Submitted to Canvas Assignments.**
 - Students are expected to complete Pre-lab and Post-lab exercises for each experiment. These exercises should be treated as individual assignments representing your own work. In other words, your data may be from the same set or "identical", however, the

way you summarize or explain concepts in your post-lab exercises or in full lab reports cannot be the same or identical, as it is considered unethical. Any violation of the University's Academic Integrity policy may result in a failing grade for the course and dismissal from the University.

BEFORE COMING TO LAB:

1. Refer to the class schedule to ensure that you are preparing for the correct experiment. Thoroughly read the experimental discussion and procedure.
2. Make certain you have proper lab attire. If you show up with improper lab attire, you will have to leave the lab, and will be given an unexcused absence.
3. **Complete the pre-lab Assignment:** Pre-lab Assignments require a basic understanding of the chemical principles being observed in each experiment. Answering these questions requires you to read the background material provided in the first pages of the experiment. Additionally, it may be helpful to read relevant material in your lecture textbook or outside sources.
 - The pre-Lab ASSIGNMENT for the experiment is due before the beginning of the lab period for that experiment (canvas assignment)
 - Full name, date and section number must be written clearly.
 - All work of the pre-lab should be clear, presentable, and handwritten in ink.
 - All calculations must be written in the spaces provided and answers reported to the correct number of significant figures. Your work must be clearly shown to receive full credit for the answers.
 - You must upload the Pre-lab work to the respective assignment in canvas before the start of your lab period. Anything submitted after the start of the lab period is considered late and will be graded accordingly (see Late Work section).

DURING THE LAB CLASS: Experimental work and Data collection

- A pre-lab discussion (if needed) is provided at the beginning of the lab period, which includes any changes or modifications in the lab procedure, special safety instructions, and tips which may make your experiment run more smoothly. Please be on time.
- Record the unknown number (if applicable), begin the experiment, recording all the data IN INK in your data pages from the lab manual or handout using correct units, proper significant digits, etc.
- Full name, date and section number must be written clearly on the data pages.
- All data must be recorded in ink (no pencils or correcting tape). Data recorded in pencil and/or with correction tape will not be graded and you will not receive any points for the data page.
- Do not write data on a separate sheet of paper. Scrap paper is not acceptable for recorded data.

AFTER THE EXPERIMENT IS COMPLETED: Data and Calculations:

- A sample calculation should be shown for each type of calculation performed in the experiment. Calculations may be shown on the Data Page if there is space available or on a separate sheet of paper. All measurements must include units and be clearly labeled.
- All calculations must be done with detailed work in ink (no pencils or correcting tape) and the answers must be reported with proper significant digits.
- Submit the data pages for that experiment showing all data and detailed calculations, etc. to the respective assignment in canvas by the due date (typically the next lab period).

General rubric for Lab Experiment Grades:

Pre-Lab	10 points
Data collected/calculations/graphs etc.	35 points
Post-lab assignments questions answered with full work	35 points
Participation/following lab rules	20 points

Total: 100 points

General rubric for Lab Report Grades:

Pre-Lab	10 points
Initial lab report submission/Completing peer review	10 points
Participation/performance	20 points
Lab Report (no post-lab due)	60 points*

Total: 100 points

*Please see the Lab Report Guide on Canvas for more information on what is expected in the Lab Report

PLEASE NOTE: points may be redistributed between the data, and post lab sections based on the work involved.

Lab Coats and Goggles

The detailed safety rules will be discussed during the first lab periods. The safety protocol must be followed at all times in the lab. If students are not following the safety policies, they will not be permitted in the lab and will thus receive a zero for that lab experiment. The Lab coat and goggle policy can be found on the Canvas course page. Please be sure to read over it, understand it, and ask your instructor any questions you may have.

Safety Rules:

1. Food and drinks are not allowed into the lab at any time.
2. Dress Code: Required
 - Closed Toes Shoes
 - Long pants/skirts
 - Shirts or tops should have sleeves and should cover the torso.
 - Long hair tied back.
3. Safety Goggles: You must wear goggles over your eyes, not on your forehead or around your neck. You will lose 1 point from your laboratory work each time the instructor needs to remind you to put on the safety goggles.

Academic Support Resources

- **Library:** Students can access the Florida Polytechnic University Library through the University website and [Canvas](#), on and off campus. Students may direct questions to library@floridapoly.edu.
- **Peer Learning Strategists (PLS):** Are specially trained student leaders who help their peers strategize approaches to course content and work through solution methods. PLS work in

collaboration with the courses they support so the content and methods are aligned with your instructors' expectations. Students can meet with a PLS in The Learning Center, which is located on the first floor of the Innovation, Science and Technology (IST) building in room 1019.

- **Academic Success Coaches:** All students at Florida Poly are assigned an Academic Success Coach. Your Academic Success Coach can assist you with academic success strategies. Please visit the Student Success Center on the second floor of the IST building to meet with an Academic Success Coach.
- **Writing Center:** Located on the second floor of the IST (2059/2061), the Writing Center helps students to develop their writing and presentation skills. Consultations are available in person and virtually. For more detail, visit floridapoly.edu/writing-center.

Civility and Collegiality

Faculty and students come to the university for the same reason, which is to participate in a highly professional educational environment. To that end, both students and faculty are expected to treat each other with mutual regard and civility. Communication, written, oral and behavioral, between faculty and students must remain respectful. Within and outside of the classroom, students must refrain from derogatory comments toward the faculty member and their fellow students, and faculty as well must refrain from derogatory comments toward their students. Faculty and students should address each other with respect, in accordance with the wishes of the faculty and the students: for example, no one should be addressed by their last name alone.

Faculty from the outset of a course can and should specify what constitutes activities and behavior that take away from, that diminish, the educational environment. An individual student's distracting behavior impedes the education of fellow students, which itself is a form of disrespect. Civility and collegiality also include respecting each other's time: for example, neither students nor faculty should arrive late to class (unless unforeseen, pressing circumstances prevail); faculty should be present at the posted office hours; and students and faculty should be punctual when meeting times are scheduled. In more general terms, collegiality means respecting the right of both faculty and students to participate fully and fairly in the educational enterprise.

University Policies

Reasonable Accommodations

The University is committed to ensuring equal access to all educational opportunities. The University, through the Office of Disability Services (ODS), facilitates reasonable accommodations for students with disabilities and documented eligibility. It is the student's responsibility to self-identify as a student with disabilities and register with ODS to request accommodations.

If you have already registered with ODS, please ensure that you have requested an accommodation letter for this course through the [ODS student portal](#) and communicate with your instructor about your approved accommodations as soon as possible. Arrangements for testing accommodations must be made in advance. Accommodations are not retroactive.

If you are not registered with ODS but believe you have a temporary health condition or permanent disability requiring an accommodation, please contact ODS as soon as possible.

The Office of Disability Services (ODS):
DisabilityServices@floridapoly.edu
(863) 874-8770
The Access Point
[ODS website: www.floridapoly.edu/disability](http://www.floridapoly.edu/disability)

Accommodations for Religious Observances, Practices and Beliefs

The University will reasonably accommodate the religious observances, practices, and beliefs of individuals in regard to admissions, class attendance, and the scheduling of examinations and work assignments. (See [University Policy](#).)

Title IX

Florida Polytechnic University is committed to ensuring a safe, productive learning environment on our campus that prohibits sex discrimination and sexual misconduct, including sexual harassment, sexual assault, dating violence, domestic violence and stalking. Resources are available if you or someone you know needs assistance. Any faculty or staff member you speak to is required to report the incident to the Title IX Coordinator. Please know, however, that your information will be kept private to the greatest extent possible. You will not be required to share your experience. If you want to speak to someone who is permitted to keep your disclosure confidential, please seek assistance from the Florida Polytechnic University [Ombuds Office](#), BayCare's Student Assistance Program, 1-800-878-5470 and locally within the community at [Peace River Center](#), 863-413-2707 (24-hour hotline) or 863-413-2708 to schedule an appointment. The Title IX Coordinator is available for any questions to discussion resources and options available.

Academic Integrity

The faculty and administration take academic integrity very seriously. Violations of [academic integrity regulation](#) include actions such as cheating, plagiarism, use of unauthorized resources (including but not limited to use of Artificial Intelligence tools), illegal use of intellectual property, and inappropriately aiding other students. Such actions undermine the central mission of the university and negatively impact the value of your Florida Poly degree. Suspected violations will be fully investigated, possibly resulting in an academic integrity hearing and sanctions against the accused student if found in violation. Sanctions range from receiving a zero on the exam or assignment, to expulsion from the university. Repeat offenders are subject to more severe sanctions and penalties.

Any "special" instructions that are appropriate for academic integrity and the course should go here. *(It is essential that a heading and a statement on what constitutes, includes, academic integrity be included in the syllabus, and that the students be made aware of academic integrity at the beginning of a course.)*

Recording Lectures

Students may, without prior notice, record video or audio of a class lecture for a class in which the student is enrolled for their own personal educational use. Recordings may not be used as a substitute for class participation or class attendance. Recordings may not be published or shared in any way, either intentionally or accidentally, without the written consent of the faculty member. Failure to adhere to these requirements is a violation of state law (subject to civil penalty) and the student code of conduct (subject to disciplinary action).

*Recording class activities other than class lectures, including but not limited to lab sessions, student presentations (whether individually or part of a group), class discussion (except when incidental to and incorporated within a class lecture), and invited guest speakers is **prohibited**.*