



Physical Chemistry I Laboratory - CHEM 4101-01L Syllabus

Instructor: Dr. Ram Bhatta

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Lab Hours: F 11:00am-1:45pm

Lab Location: Science and Technology Building, Room# 327

Instructional Method: Face-to-Face

Office: STEM 311Y

Office hours: M 10am-12pm; W 10am-11am; and by appointment

Course description

This course (CHEM 4101) is the co-requisite laboratory for Physical Chemistry I (CHEM 4301) and complements the concepts introduced in the lectures. This lab is emphasized on designing and executing experiments facilitating team-oriented critical thinking and problem solving. Knowledge acquired with investigating the relationship between theory and experiment, analyzing data and writing professional report also mirrors the team-oriented problem solving in professional laboratories.

Practical implications

- Developing a feel for designing and executing experiments selecting the optimum equipment or operation in a team environment
- Developing a logic for relationship between theory and experiment
- Keeping a laboratory notebook as a record of what is done and why it is important
- Design a student project, support with the collected experimental data and present
- Analyzing physical properties of materials using modern instruments and complement with the computational data
- Analysis of experimental data using statistical analysis
- Writing professional report
- Comparing the experimental results with available published journal article(s)
- The value and limitations of computational methods

Course Materials

All required handouts will be provided on your blackboard.

Proper Clothing for lab: closed-toe shoes that covers your foot in its entirety, short skirts, NO mid-riff shirts, NO $\frac{3}{4}$ length pants, NO pants with large holes. **THIS POLICY WILL BE STRICTLY ENFORCED AND STUDENT IN NONCOMPLIANCE MAY BE DISMISSED FROM THE LABORATORY AND WILL A RECEIVE NO CREDIT FOR THAT WEEK'S EXPERIMENT.** We take **YOUR** safety in the laboratory very seriously and we expect the same from you.

Goggles and lab coat **MUST** be worn properly in the laboratory **AT ALL TIMES. NO EXCEPTIONS!** There will be no rental or loaner goggles and lab coat this semester. **You must bring your own.** Without goggle and lab coat, you will not be allowed to perform any lab activities and will receive no credit for the experiment.

Important policies and resources

Academic Accommodations for Persons with Disabilities: Texas A&M University-San Antonio is committed to providing all students with reasonable access to learning opportunities and accommodations in accordance with The Americans with Disabilities Act, as amended, and Section 504 of the Rehabilitation Act. If you experience barriers to your education due to a disability or think you may have a disability, please contact Disability Support Services in the Central Academic Building, Suite 210, or at (210) 784-1335 or visit <https://www.tamusa.edu/index.html> or email us at dss@tamusa.edu. Disabilities may include, but are not limited to, attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability-related needs with Disability Support Services and their instructors as soon as possible.

Academic Learning Center: The Academic Learning Center provides free course-based tutoring to all currently enrolled students at Texas A&M University-San Antonio. Students wishing to work with a tutor can make appointments through the Brainfuse online tutoring platform. Brainfuse can be accessed in the *Tools* section of Blackboard. You can contact the Academic Learning Center by emailing tutoring@tamusa.edu, calling (210) 784-1307, or visiting the Central Academic Building, room 202.

Counseling/Mental Health Resources: As a college student, there may be times when personal stressors interfere with your academic performance and/or negatively impact your daily functioning. If you are experiencing emotional difficulties or mental health concerns, support is available to you through the Student Counseling Center (SCC). To schedule an appointment call 210-784-1331 or visit Madla 120.

All mental health services provided by the SCC are free and confidential (as the law allows). The Student Counseling Center provides brief individual and group therapy, crisis intervention, consultation, case management, and prevention services.

Crisis support is available 24/7 by calling the SCC at 210-784-1331 (after-hours select option '2'). For more information and self-help resources, please visit www.tamusa.edu/studentcounseling

Emergency Preparedness: JagE Alert is Texas A&M University-San Antonio's mass notification. In the event of an emergency, such as inclement weather, students, staff and faculty, who are registered, will have the option to receive a text message, email with instructions and updates. To register or update your information visit: <https://tamusa.bbcportal.com/>.

More information about Emergency Operations Plan and the Emergency Action Plan can be found here: <https://www.tamusa.edu/about-us/campus-information/safety/university-police-department/documents/emergency-operations-plan.pdf> and <https://www.tamusa.edu/about-us/campus-information/safety/university-police-department/documents/emergency-action-plan.pdf>

Download the SafeZone App for emergencies or call (210) 784-1911. Non-Emergency (210) 784-1900

Financial Aid and Verification of Attendance: According to the following federal regulation, 34 CFR 668.21: U.S. Department of Education (DoE) Title IV regulation, a student can only receive Title IV funds based on Title IV eligibility criteria which include class attendance. If Title IV funds are disbursed to ineligible students (including students who fail to begin attendance), the institution must return these funds to the U.S. DoE within 30 days of becoming aware that the student will not or has not begun attendance. Faculty will provide the Office of Financial Aid with an electronic notification if a student has not attended the first week of class. Any student receiving federal financial aid who does not attend the first week of class will have their aid terminated and returned to the DoE. Please note that any student who stops attending at any time during the semester may also need to return a portion of their federal aid.

Writing, Language, and Digital Composing Center: The Writing, Language, and Digital Composing Center supports graduate and undergraduate students in all three colleges as well as faculty and staff. Tutors work with students to develop reading skills, prepare oral presentations, and plan, draft, and revise their written assignments. Our language tutors support students enrolled in Spanish courses and students composing in Spanish for any assignment. Our digital studio tutors support students working on digital projects such as eportfolios, class presentations, or other digital multimedia projects. Students can schedule appointments through JagWire under the Student Services tab. Click on "Writing, Language, and Digital Composing Center" to make your appointment. The Center offers face-to-face, synchronous online, and asynchronous digital appointments. More information about what services we offer, how to make an appointment, and how to access your appointment can be found on our website at <https://bit.ly/WLDCCenter>.

Meeting Basic Needs: Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect

their performance in the course, is urged to contact the Dean of Students (DOS@tamusa.edu) for support. Furthermore, please notify the professor if you are comfortable in doing so. This will enable them to provide any resources they may possess.

Military Affairs: Veterans and active-duty military personnel are welcomed and encouraged to communicate, in advance if possible, and special circumstances (e.g., upcoming deployment, drill requirements, disability accommodations). You are also encouraged to visit the Patriots' Casa in-person room 202, or to contact the Office of Military Affairs with any questions at military.va@tamusa.edu or (210)784-1397.

Religious Observances: Texas A&M University-San Antonio recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holidays according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance provided they notify their instructors before the end of the second week of classes for regular session classes.

The Six-Drop Rule: Students are subject to the requirements of Senate Bill (SB) 1231 passed by the Texas Legislature in 2007. SB 1231 limits students to a maximum of six (6) non-punitive course drops (i.e., courses a student chooses to drop) during their undergraduate careers. A non-punitive drop does not affect the student's GPA. However, course drops that exceed the maximum allowed by SB 1231 will be treated as "F" grades and will impact the student's GPA.

Statement of Harassment and Discrimination: Texas A&M University-San Antonio is committed to the fundamental principles of academic freedom, equality of opportunity and human dignity. To fulfill its multiple missions as an institution of higher learning, A&M-San Antonio encourages a climate that values and nurtures collegiality and the uniqueness of the individual within our state, nation, and world. All decisions and actions involving students and employees should be based on applicable law and individual merit. Texas A&M University-San Antonio, in accordance with applicable federal and state law, prohibits discrimination, including harassment, on the basis of race, color, sex, religion, national origin, age, disability, genetic information, veteran status, sexual orientation, gender identity, gender expression, or pregnancy/parenting status. Individuals who believe they have experienced harassment or discrimination prohibited by this statement are encouraged to contact the appropriate offices within their respective units.

Texas A&M University-San Antonio faculty are committed to providing a safe learning environment for all students and for the university as a whole. If you have experienced any form of sex- or gender-based discrimination or harassment, including sexual assault, sexual harassment, domestic or dating violence, or stalking, know that help and support are available. A&M-San Antonio's Title IX Coordinator can support those impacted by such conduct in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, and more. The university strongly encourages all students to report any such incidents to the Title IX Coordinator. Please be aware that all A&M-San Antonio employees (other than those designated as confidential resources such as counselors and trained victim advocates) are required to report information about such discrimination and harassment to the university. This means that if you tell a faculty member about a situation of sexual harassment or sexual violence, or other related misconduct, the faculty member must share that

information with the university's Title IX Coordinator (titleix@tamusa.edu, 210-784-2061, CAB 439K). If you wish to speak to a confidential employee who does not have this reporting requirement, you can contact the Student Counseling Center at (210) 784-1331 or visit them in Madla 120.

Pregnant/Parenting Students: Texas A&M-San Antonio does not require a pregnant or parenting student, solely because of that status or issues related to that status, to (1) take a leave of absence or withdraw from their degree or certificate program; (2) limit the student's studies; (3) participate in an alternative program; (4) change the student's major, degree, or certificate program; or (5) refrain from joining or cease participating in any course, activity, or program at the University. The university will provide reasonable accommodations to pregnant students that would be provided to a student with a temporary medical condition and that are related to the health and safety of the student and the student's unborn child. These could include maintaining a safe distance from substances, areas, and activities known to be hazardous to pregnant individuals and their unborn child; excused absences because of illness or medical appointments; modified due dates for assignments; rescheduled tests/exams; taking a leave of absence; and being provided access to instructional materials and video recordings of lectures for excused absences, if these would be provided to any other student with an excused absence. Pregnant/parenting students are encouraged to contact the Title IX Coordinator with any questions or concerns related to their status (titleix@tamusa.edu; 210-784-2061; CAB 439K).

Texas A&M-San Antonio has also designated the Title IX Coordinator as the liaison officer for current or incoming students who are the parent or guardian of a child younger than 18 years of age. The Title IX Coordinator can provide students with information regarding support services and other resources.

University Email Policy and Course Communications: All correspondence between professors and students must occur via University email accounts. You must have your Jaguar email account ready and working. If it is not working, contact the help desk at sahelp@tamus.edu or at 210-784-HELP (4357). If you don't hear back within 48 hours, contact them again. They have a lot of requests during the first part of the semester, so you may need to follow up with them. Students are expected to access Blackboard for updates on the course announcements and other course materials. Discussions concerning grading/grades will not be addressed through email and will only be discussed during office hours or scheduled appointments.

Electronic Devices during Exams. All electronic devices must be completely stored during exams and quizzes, this does not include approved scientific calculators (see course materials). Academic misconduct and attempts to cheat during the exam will be pursued according to Texas A&M-San Antonio code of conduct policy.

Visitors. Only students enrolled in the course are allowed in the class. No visitors are allowed.

AI policy CHEM2323-001 assumes that all work submitted by students will be generated by the students themselves, working individually or in groups. Students should not have another person/entity do the writing of any portion of an assignment for them, which includes hiring a person or a company to write assignments and/or using artificial intelligence (AI) tools like ChatGPT. Use of any AI-generated content in this course qualifies as academic dishonesty and violates Texas A&M-San Antonio's standards of academic integrity.

Attendance Policy. All students are expected to attend all laboratories and be fully and actively engaged in lab activities. Attendance will be monitored. Absences will be excused if due to illness (medical excuse), death of a close family member, religious holiday (please inform instructor), official university activity, cancellation of classes/closure of the University, military duties, pregnancy & related conditions, or participation in legal proceedings. Only **one** laboratory will be excused for the above reasons.

Be prompt. TARDINESS WILL NOT BE TOLERATED. A point from your experiment grade will be deducted for every minute you are late, up to 20 minutes. After 20 minutes, you will not be allowed to perform the experiment. Pre-lab lecture and lab attendance will be recorded at the beginning of each meeting.

Late Work Policy. Students will be informed about due dates and times for laboratory reports. Work is required to be turned in on time. Late work will be subjected to an additional 25% penalty per day. For example, if a report is due Friday at 11:59pm and the student submits the report on Saturday at 8am, 25% will be deducted. If the report is submitted on Sunday, 50% will be deducted. Late lab work that is more than three days late will not be accepted.

Lab Partners. Students will work with a partner. We have made every effort to ensure that an even number of students are enrolled in this class. Therefore, barring extenuating circumstances, only groups of two students are permissible. Each group of two is expected to work independently and not with neighboring groups.

Lab partners may be randomly assigned by the instructor and may be changed at any time on a rotating basis.

Visitors. Only students enrolled in the course are allowed in the class. No visitors are allowed.

The complete academic calendar is available online:

<https://catalog.tamusa.edu/undergraduate/academic-calendar/>

Please be familiar with key dates such as last day to drop the class, final exam etc.

Tentative Schedule[®]

Week #	Date	Experiment	Report due
1	Jan 19	Lab safety/Check-in	Signed Lab Safety Form
2	Jan 26	Student project discussion and selection of topic from Physical Chemistry that is feasible to do experiment	
3	Feb 02	Maxwell-Boltzmann distribution function	
4	Feb 09	Thermodynamics of acid-base complexes	Maxwell-Boltzmann function
5	Feb 16	Thermodynamics of acid-base complexes cont.	
6	Feb 23	Viscometer	Thermodynamics of acid-base complexes
7	Mar 01	Polarimetry	Viscometer
8	Mar 08	Student project workday	Polarimetry
9	Mar 15	Spring break – No lab	
10	Mar 22	Thermodynamic Functions of an Electrochemical Cell	
11	Mar 29	Study day – No lab	
12	Apr 05	Kinetics	Thermodynamic Functions
13	Apr 12	Bomb Calorimetry	Kinetics
14	Apr 19	Student Presentation	Bomb Calorimetry Submit presentation slides via blackboard by 10am
15	Apr 26	Lab Checkout	
16	May 03	Final exam week – No lab	

Grading:

Your grade for the course will be assigned based on your performance on online special topics presentation and lab reports. These are the only opportunities for you to earn points throughout the semester. There will be **no** opportunities for extra credit.

Lab reports: 7 x 100 points each	700 points
Project presentation: 1 x 100	100
Total	800 points

To calculate your letter grade, use the following equation:

$$\left(\frac{\sum(\text{Points earned})}{800} \right) * 100 \%$$

Letter Grade:	A	B	C	D	F
% of Total Points:	90.0 - 100%	80.0 - 89.9%	70.0 - 79.9%	60.0 - 69.9%	0 - 59.9%

Should you have a question concerning the way that your lab was graded, or if you think that there was an error in calculating the lab score, then it is your responsibility to bring the matter to the attention of the instructor within three calendar days of the date when your lab score was updated on your blackboard.

IMPORTANT. Each student receives this information during the first lecture. It is your responsibility to read this material and be familiar with the course content, schedule, grading and safety procedure.