

### Course Information

- Darren L. Williams, Ph.D. (a.k.a. DW)
  - Office: CFS 317 G, Office hours are 10 TO 10:50 AM, MTWRF, and other times by appointment. Email is the preferred method for making appointments.
  - Contact (936)294-1529, [williams@shsu.edu](mailto:williams@shsu.edu), SHSU Page: [http://www.shsu.edu/~chm\\_dlw/](http://www.shsu.edu/~chm_dlw/)
  - Social: <https://twitter.com/@pchem4all>; [www.facebook.com/pchem4all](http://www.facebook.com/pchem4all); Blog: [www.pchem4all.com](http://www.pchem4all.com)
- Lecture will meet in CFS 103 on Monday, Wednesday, and Friday from 8 to 9 AM.
- The laboratory will be open on Monday (Section 11), Tuesday (Section 12), Wednesday (Section 13), and Thursday (Section 14) from 1 to 5 PM. We will meet CFS 102 at the beginning of every lab period. We will collect our data in various labs in the building, so be ON TIME. Lab attendance is required on **your lab day** each week.

### Course Description

The foundations of thermodynamics and spectroscopic methods (radio-frequency, microwave, infrared, Raman, UV-visible, and X-ray) are developed from first principals with an atomistic point of view.

- Four-hour laboratory. Writing Enhanced. Fall. Credit 4.
- Prerequisites: A minimum grade of C in CHEM 2325, MATH 1430 and one year of physics.

### Course Objectives

The main course objectives are:

- IDEA Objective #1: To gain factual knowledge (terminology, classifications, methods, trends)
- IDEA Objective #2: To learn fundamental principles, generalizations, and theories.

Enabling Objectives direct student effort toward the course objectives. The students will be exposed to and demonstrate some mastery of:

- Experiments that illustrate the need for quantum theory.
- The mathematics associated with basic quantum theory.
- Spectroscopic measurements to determine physical constants.
- The use of symmetry/group theory to interpret spectroscopic measurements.
- The use of computational chemistry programs that support the above objectives.
- The use of Microsoft Excel for numerical integration, non-linear equation modeling, and spectral simulation.

### Required Textbook

- Engel and Reid, Physical Chemistry 3rd Ed, Pearson, (ISBN-13: 978-0-321-81200-1)

### Grading Policy

- To determine the final course grade, the student's numerical average will be compared to course requirements, to peer performance, and to the definitions set forth in the University Catalog. Specific grade cut-off values are not predetermined.
- Students taking this course for graduate credit will be required to prepare an additional report that incorporates various facets of the course into one advanced problem assigned by the instructor and typically associated with one of the laboratory exercises. This report will constitute an additional 10% towards the final grade average. This results in the following weighting factors: Out-of-class Participation = 5%, Lab = 15%, Exams = 70%, Final Report = 10%.

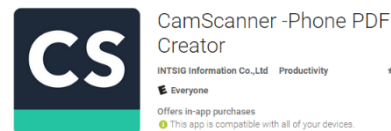
Category	Weight
In-class Participation	Required
Out-of-class Participation	10%
Laboratory	20%
Exams	70%

### In-Class Participation Policy (Attendance, Preparation, Engagement)

- *When considering letter grades, students who are on the edge of a grade cut-off will receive the lower letter grade if they have regularly missed class, have habitually been **poorly prepared**, or have shown **little interest** in the material.*
- **Lecture Attendance** is required and is recorded by signing the roster during class or by SHSU login on a Kahoot quiz.
- **Engagement** Regular participation (>80%) in **Kahoot! Quizzes** in class using an SHSU LOGIN ID will provide extra credit (up to 10 points) toward the out-of-class participation grade.
- **Laboratory attendance and reports** are mandatory. If unavoidable conflicts arise, then arrangements should be made in advance by the student. The schedules of the TA and the professor take precedence over the schedule of the student (including work schedules) when making arrangements for makeups. **CRITICAL**: An unannounced and unaddressed laboratory absence will **yield a failing grade** (an F) in the course. If **any** lab report is not turned in, then that student will receive **a failing grade** (an F) in the course. Communication is the REAL issue. If special circumstances arise, then, tell BOTH the TA and Dr. Williams, IMMEDIATELY.
- **Preparedness** Juvenile behavior like showing up to the exam without a scantron will be recorded.

### Out-of-class Participation (Homework and Responsiveness)

- **Documentation of Homework Effort:** The purpose of homework is to help STUDENTS learn the material. Every student will be required to keep a **problems composition notebook**. A pdf scan (see app to the right) of the hand-written homework problems will be uploaded to blackboard EVERY THURSDAY by 11:59 PM. No late submissions or hard-copies will be accepted. *Waiting until Thursday night may cause a student to have 0 points for that week if there are computer problems.*
- **Substantial Effort** is required. Each scanned page is worth 1 point. The page should have a substantial amount of work on it. Problems, equations from the text, notes based upon texts and external sources are allowed. **Class notes do not count because this problems notebook is meant to capture what you do OUTSIDE of class.** Full credit will be given for **100 pages by the end of the semester**, which yields a weekly effort of about 10 pages per week.
- **No Procrastination.** Any week without pages will yield a reduction of ten points.
- **Responsiveness** is critical in “the real world”. Often action is needed in response to email. A gradebook item will be used to keep track of those who habitually 1) become “unresponsive”, 2) lose emails, or 3) reach the storage limits of their campus inbox. This gradebook item will be averaged into the Out-of-class Participation average. DW will not use off-campus emails, because the use of private email accounts are not allowed in some “real world” employment situations. *You should learn how to clean up your campus account.*



### Laboratory Work

- The laboratory experiments and the requirements for laboratory reports will appear on Blackboard as the semester progresses. Lab work will feed directly into the exams in both the multiple-choice sections and the open-ended questions. **Success on the exams requires a timely and genuine effort on the laboratory portion of the course.**
- Sometimes oral instructions and modifications are given in class. These are binding, and detailed notes of what is said in class are required for success.
- The top priority for laboratory work is SAFETY!
  - Safety glasses or goggles **MUST** be worn in the CFS 313 or 235 physical chemistry laboratories.
  - If the actions of any student are deemed to be unsafe and hazardous to themselves, their peers, or the well-being of the facilities, the student will be removed from the laboratory, and an appointment will be made with the Department Chair to evaluate a course of action.
- **The names of students who leave lab early will be recorded by the TA, and these students will not receive any further help from the TA or DW in completing their assignments on that particular lab.**
- Students should not be in the laboratory if they are not working on their experiment. Visitors to the laboratory are prohibited unless escorted by departmental personnel. If a student needs to meet with others who are not registered in the course they must leave the laboratory.

### Exams

The exam schedule will be continually updated throughout the semester on Blackboard. **BRING A SCANTRON 882-E and a pencil to each exam. You may bring a 3x5 inch notecard** with hand-written equations and memory aides to each exam. DW will measure and cut any excess material from the card. Computer generated cards will be confiscated.

The exams and scantrons will remain the property of SHSU as a record of student performance. The students are welcome to compare their exams to the key in DW's office. **Taking photos or scanning the key** will be punished as academic dishonesty.

DW does not give make-up examinations. In the unfortunate case, where a student misses an exam, DW will discuss possible remedies with the student provided that all the following conditions are met:

1. The student was absent on the exam date.
2. The student telephoned in advance or left a voice mail message or email message alerting Dr. Williams to their absence along with a description of why they are to miss the exam. (All information will be kept in confidence.)

DW reserves the right to modify the grading scheme such that the final exam may compensate for the missed exam course percentage. DW also reserves the right to assign an exam grade of 0% should he deem the absence was not properly handled or was unjustified. Appeals will be handled in accord with University Policy Statement 900823, Academic Grievance Procedures for Students.

The 2-hour final **comprehensive** examination will be on Monday December 4th from 8 to 10 AM. Tell your family and friends that you **CANNOT** leave town early for vacation, work, leadership conferences, rodeo finals, or anything. **Modify your plans NOW to fit your academic schedule.** The final exam will be weighted equally with the other exams in computing the exam average. Keep all notecards because they can ALL be used on the final. (Nice!)

### **Employment Recommendations**

*With few exceptions, Dr. Williams only writes recommendation letters for students who make an A in his course the first time they take the course.*

### **Academic Dishonesty**

Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. The University may initiate disciplinary proceedings against a student accused of any form of academic dishonesty including, but not limited to, cheating, plagiarism, and the abuse of resource materials. DW reserves the right to ask for an oral explanation of work submitted to determine if the student actually performed the work. This should not be construed as an accusation of academic dishonesty. Only in cases where the student cannot demonstrate the most basic explanation of what they submitted as their original work will there be any question of dishonesty.

If DW or the TA believes that a homework assignment or laboratory report is a copy of another person's work, you will receive a grade of 0%, and disciplinary action will be considered.

This includes work from students who took the course in the past. We have their reports loaded into TurnItIn, and a similarity report will show if you "started with" or copied their work. DON'T DO IT. Learn the material ON YOUR OWN.

### **Additional Disclaimers:**

**Rules of Conduct:** Cell phones must be turned off before class begins. Students are prohibited from text messaging, emailing, Facebooking, or engaging in any other form of distraction. Students who are especially disruptive will be asked to leave and may be reported to the Dean of Students for disciplinary action. **Students with Disabilities Act:** Any student with a disability that affects his/her academic performance should contact the Office of Services for Students with Disabilities in the SHSU Lee Drain Annex (telephone 936-294-3512, TDD 936-294-3786) to request accommodations. **Visitor Policy:** Dr. Williams will decide whether or not visitors will be allowed to remain in the classroom. **Religious Holidays** University policy (APS 861001) and state law (Section 51.911(b), Texas Education Code) require that a student who is absent from class for the observance of a religious holy day fill out form (see APS 861001) in the first week of class. This form must be signed by the instructor, the student, and approved by the departmental chair. **Course Material Copyright ©2017** Course material is reserved to Sam Houston State University, and may not be mass-produced, posted online, sold, or reproduced for purposes other than personal use by students registered for this course in the current semester.