



CHE 321: ELEMENTARY PHYSICAL CHEMISTRY I

Course Requirements

Morehouse College

Fall 2017



Instructor:	Wallace D. Derricotte	Time:	MWF 10:00am – 10:50am
Email:	wallace.derricotte@morehouse.edu	Place:	106A Merrill Hall
Office:	343 Merrill Hall	Office Hours:	M 1:00PM - 4:00PM

Online Course Page: All lecture media for this course will be made available via my personal web page at www.derricottresearchgroup.com under the “Teaching” tab and via Blackboard. It is recommended that you check online resources regularly throughout the semester for lectures and other information pertaining to the course. If you require assistance in accomplishing these tasks, please see the instructor.

Textbook(s): *Physical Chemistry*, 9th Edition, by Peter Atkins and Julio De Paula, FREEMAN

Course Description: Part of a two-semester course sequence (321/322), Chemistry 321 is a physical chemistry course that relies heavily on your understanding and recall of the general chemical principles first presented in the introductory course sequence (111/112). Physical chemistry can be broadly defined as the application of physics to chemistry. The physics serves a guide with which we can build various models to explain chemical phenomena. These models include the kinetic theory of gases, collision theory of reactions, etc. The construction of these physical models requires the support of mathematics. Thus, physical chemistry is an inherently mathematical subject matter and can be conceived faster through practice exercises and problem solving. Many problems will be assigned in this course through weekly problem sets, however it is encouraged that students seek to solve as many end-of-chapter problems as possible. 321 specifically focuses on quantitative problem solving in chemical thermodynamics and kinetics. More detailed theoretical insight will be gained about familiar chemistry concepts such as the ideal gas law, entropy, enthalpy, calorimetry, temperature, and catalysis. Students will harness the ability to solve complex problems in these areas and learn to approach chemical problems based on physical insight.

Pre-Requisite(s): CHE 232 (Elementary Organic Chemistry II), PHY 154 (Mechanics), and MTH 162 (Calculus II).

- **NOTE:** The Department will confirm the prerequisites and co-requisites for each student in this class. If a student is found to not have the proper prerequisites and co-requisites, they will be immediately and involuntarily withdrawn from the course, regardless of time spent in the course or performance in the course. If you believe that you do not have the proper prerequisites and co-requisites, or you have questions regarding the prerequisites and co-requisites, you should notify your instructor immediately.

Course Presentation: Course presentation will be in the form of lectures, small group exercises, demonstrations, and on-line presentation/exercises.

Course Objective: The student is expected to become proficient in the knowledge of chemistry and its governing scientific principles.

Attendance: Morehouse College attendance rules will be enforced. Students are expected to attend each class meeting. Students with more than three (3) unexcused absences will be referred to the Office of Student Success and may be administratively withdrawn from the course. Failure to meet minimum attendance

requirements may result in the loss of the students financial aid in accordance with federal financial aid requirements.

Inclement Weather Policy: In the event of inclement weather, the College will announce any closures via the emergency notification system and/or through local news outlets. Absent an official closure, students are not excused from attending class due to weather and any absences will be considered unexcused.

Tentative Exam Schedule: There will be four in-class examinations and one final exam given during the semester. Your lowest exam score will be dropped from your final grade.

Exam 1	September 29 th , 2017
Exam 2	October 20 th , 2017
Exam 3	November 10 th , 2017
Exam 4	November 27 th , 2017
Final Exam	TBD

Course Grading: Problem Sets (30%), Exams (40%), Final Exam (20%).

Evaluation: Students must earn a grade of C or better to pass this course. If a student receives a grade of C- or less in this class, they will not be allowed to register in the next chemistry course along this sequence. Please note that all grades are final. No adjustments to grades will be made after the close of semester, except in the case of the grade of incomplete, I (see below) or incorrect grades given due to instructor error.

90–100	A	85–89	A-	80–84	B+	75–79	B	70–74	B-
65–69	C+	60–64	C	55–59	C-	50–54	D	< 50	F

Recitation: Recitation is provided to support you in your efforts to be successful in this course. When you register into a lab for this course, you must also register into a recitation session for chemistry, as well (HCHE 321R).

Incomplete: A grade of incomplete will be given only when a student has completed the majority of the course requirements, as specified by the instructor. The student must provide a written excuse, signed by the appropriate university official excuse (e.g., Dean of Students, Division Dean, etc.) indicating a legitimate reason for not completing the course by the close of semester. The student must complete the required course work in the next semester on or before the date indicated by the Registrars Office or the grade will be converted into an F.

Academic Honesty: Morehouse College students are expected to conduct themselves with the highest level of ethics and academic honesty at all times and abide by the terms set forth in the Student Handbook and Code of Conduct. Instances of academic dishonesty, including, but not limited to plagiarism and cheating on examinations and assignments, are taken seriously and may result in a failing grade for the assignment or course and may be reported to the Honor and Conduct Review Board for disciplinary action. For this course, cheating on homework, quizzes, and examinations will not be tolerated and will result in a grade of zero on the assignment for the first offense, and for a second offense, the student will be immediately and involuntarily withdrawn from the course, and will receive a grade of F. A second offender will also be

reported to Honor and Conduct Review Board for disciplinary action, including possible dismissal from the college.

Tentative List of Topics:

- | Properties of Gases and the First Law of Thermodynamics
- | Critical Behavior, Heat, Work, and Internal Energy
- | Entropy and the Second Law of Thermodynamics
- | Combining the First and Second Laws
- | Gibbs and Helmholtz Free Energies/Gibbs-Helmholtz Equation
- | Maxwell Relations
- | Phase Equilibria
- | Kinetic Theory of Gases/Molecular Flux
- | Experimental Kinetics

Educational Outcomes:

- | Have an appreciation for the interconnected nature of chemistry, physics, and mathematics.
- | Be able to identify, classify, and quantify the physical state of a system.
- | Make predictions about macroscopic properties given information about the microscopic state of a system.
- | Understand and appreciate the role of temperature in chemistry.
- | Understand equations of state and their power in classifying chemical systems.
- | Be able to use statistics as a predictive tool for chemical problems.
- | Have the ability to identify what physical principles constitutes a "good" catalyst.