Chemical Principles (260):	3 Credit hours	
Lecture Sessions:	Section 100: 10:00-11:00 am MWF	(1230 USB)
	Section 200: 1:00-2:00 pm MWF	(1250 USB)
	Prof. Ayyalusamy Ramamoorthy (4024 Chem.)	ramamoor@umich.edu
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Meeting with the instructors outside office hours is by appointment only.

Office hours will be posted on Canvas in the first week of class.

Course Texts & Materials

You will need to possess the first three items listed below. These are the only required items for this course.

Textbook: The course will use *Physical Chemistry for the Biosciences* by Raymond Chang published by University Science Books ISBN-13: 978-1891389337, ISBN-10: 1891389335

***i>clicker*® Remote**. You are required to bring your *i>clicker* remote to each whole class section. These are available from the UM Computer Showcase.

Calculator: An inexpensive calculator is required. It should have capabilities for square roots, trig functions, logarithms and exponentiation, and exponential (scientific) notation operations. The calculator will be used on homework assignments, in class, and on exams. Although a programmable calculator is acceptable, it is not required.

Other Readings. Unfortunately, an ideal textbook for the material covered in Chemistry 260/261 does not exist. Though you will use *Physical Chemistry for the Biosciences* as the primary text in this course, we will ask that you consult other readings or web sites in order to fully master the material. Readings will be in .pdf form and available on the course Canvas web site.

The Canvas Web Site. Important course announcements will be posted on Canvas. Much of the material for this course is only available via the Files tool within Canvas. You automatically have access to the 260/261 materials via Canvas if you are enrolled in this course. It is strongly recommended that you visit the course Canvas site on a regular basis in order to download lecture notes, problem sets, and supplemental readings as well as read announcements posted by the lecturers and the GSIs.

Course Grading & Evaluation

Exams

There will be two midterm exams of 2 hours each and a 2-hour final exam. The final exam will be comprehensive, covering the entire semester, with specific attention given to the topics covered after the second midterm exam.

Please note the exam date on your calendar. Room assignments will be announced at a later date. If you have an unavoidable conflict, contact your instructor immediately**.**

Midterm Exams:	Monday, February 17	6:00 – 8:00 PM
	Tuesday, March 24	6:00 – 8:00 PM
Final Exam:	Thursday, April 23	8:00 – 10:00 AM

You may bring one 8½ by 11-inch ***self-generated*** self-prepared sheet (content on both sides and no photocopied material) to the midterm examinations. You may add a second sheet for the final exam. You should also bring a calculator. In addition, you will be provided with physical constants, potentially useful equations, and a periodic table. The information sheet included with the exam will be posted on Canvas ahead of time for your reference.

Alternative Midterm Exam Times. Because conflicts are often unavoidable, we will be holding alternate midterm exam times on the same day as the "main" exam. You must sign up to take exam at an alternate time at least 48 hours prior to the exam day. We will arrange a system for managing the conflicts later in the term. An alternate time will be offered for the final ***only*** in the event that you have two finals scheduled for 4-6 pm on April 27.

Class Participation and Attendance

Attendance in lecture is required for this course.

Reading quizzes. *Prior* to each whole class lecture, there will be a reading quiz that you will complete on Canvas. These quizzes are intended to determine whether you have read the text; they are not supposed to be overly intellectually taxing. Reading quizzes assess your comprehension of the assigned reading for a particular session. It has been shown that exposure to the material in advance of class greatly enhances students' ability to master difficult concepts. Full credit for the reading quizzes requires correct responses. Each quiz will expire by 10:00 AM of the day of lecture.

Class Participation. During whole class sessions, you will use a wireless remote-controlled response system for class survey activities. The i>clicker system adds an interactive element to the whole class sessions and engages you in the material more so than standard lecturing techniques. **Please be sure to bring your i>clicker remote to class each day** so that you will be able to participate in these activities. If you forget your remote, you will *not* be allowed to hand in or email your responses. Participation with the i>clicker system in class will contribute to your final grade. The participation score does not distinguish correct or incorrect responses.

Discussion Section. Although attendance in discussion is not directly graded we expect all students to avail themselves of the opportunities provided in discussion section. We ***will*** keep a record of attendance. If you are unable to attend the section you are registered for, you may attend another as long as space is available.

Problem Sets

A total of 10 problem sets will be used in calculating your final grade. During the semester, there will be 11 problem sets, so that means **your best 10 scores will be used to compute your grade**. Please note that the problem sets are designed to help you learn the material and to be prepared for the exams. Problem sets will require you to demonstrate a problem-solving ability and conceptual understanding well beyond that required for the study questions at the end of each book chapter. Moreover, problem sets may also require you to use other applications such as Microsoft Excel or interpret the outputs of web-based materials. As we expect you to struggle somewhat in working through these difficult exercises, we encourage you to work together. However, every member of the class must turn in a hand-written copy of each problem set. **Group submissions or blatant copies will not be accepted.**

Sometimes problem sets get misplaced or are handed in to the wrong place. Please upload a scanned or photographed version of your problem set to the assignment on Canvas. Using your phone is fine.

Problem sets will be due by 4:00 pm on the specified dates. You may either turn them in at the beginning of one of the day's lectures or to the Chemistry 260 mailbox, located in the mailroom across from 1500 Chemistry. Please note that material in the Chemistry 260 mailbox will be retrieved promptly at 4:00 pm so any problem sets turned in to the mailbox after 4:00 pm are in danger of not being noticed and/or found. **Please identify yourself on each problem set with your name, student ID number, and the name of your GSI. Please do not submit problem sets to an individual instructor's mailbox.**

Grades

Grades for Chem 260 will be based on a maximum of 700 points divided as follows:

Problem sets	150 points
Reading quizzes will comprise 10% of the course grade	70 points
i>clicker activities will comprise 10% of the course grade	70 points
Two midterm exams	200 points
Compute-to-Learn Surveys (both surveys)	10 points
Final exam	200 points
Total	**700 points**

Letter Grades. Final grades will be based upon the absolute scale shown below. If you score the number of points indicated, then you will receive the letter grade indicated, regardless of how many other students achieve the same grade. **There is no curve**. Any student receiving 85% of the available points will receive at least an A-. Therefore, it is to your benefit (and to your friends' benefit) that you help other students learn and they help you learn. The general grade breakdown is shown below:

		Chem 260
Lowest A-	85%	595 points
Lowest B-	70%	490 points
Lowest C-	60%	420 points
Lowest D-	50%	350 points

The highest grades, A+, A, and A-, require ***demonstrated mastery*** of the material through examinations and quizzes.

Academic Integrity

We take academic integrity very seriously in this course. All incidents of academic dishonesty will be reported to appropriate college office. Violations include, but are not limited to, turning in homework copied from a classmate or another person, bringing prohibited material to the exam, looking at a classmate's paper during an exam, submitting answers using an i>clicker registered to a classmate during class or allowing a classmate to submit answers using your i>clicker during class.

Important Administrative Information for Chemistry 260

Electronic Mail: You are encouraged to contact your instructors by email if you have questions about anything to do with the course. Instructor email addresses can be found on the first page of this syllabus. We will try to respond with minimal delays.

What to Do If You Are Unexpectedly Sick, Or Otherwise Unable To Attend An Exam: If you are unable to attend an exam because of an unavoidable schedule conflict, for example a simultaneously scheduled class or a religious observance, contact your GSI as soon as possible. **If circumstances arise unexpectedly that preclude your taking an exam, please contact your GSI or instructor before the scheduled exam time.** We recognize that in an emergency situation, you may not be able to contact us in a timely way.

Cell Phone Policy: If you bring a cell phone to class, please turn it off for the duration of the class period. If there is a situation that requires that you be able to answer your cell phone during a class, please inform your instructor before the class.

Studies have shown (https://www.sciencealert.com/phones-in-lectures-can-hurt-grades-even-when-not-used) that using phones and computers during class leads to reduced mastery of course material and poorer performance on course exams (https://www.tandfonline.com/doi/full/10.1080/01443410.2018.1489046).

Health or Disability Concerns

All students at U of M are entitled to an accessible, accommodating, and supportive teaching and learning environment. The provision of reasonable accommodation for students with disabilities is a shared faculty and student responsibility. Students are expected to inform the instructor of their need for accommodation; the instructor and GSI are expected to make the necessary arrangements. If you have special needs, please make an appointment to speak to the lecturers and your GSI at your earliest convenience. For more information on university wide services for accommodating students with special needs on campus see http://www.umich.edu/~sswd/.

Other Policies

For a full list of LSA and Chemistry department policies that are relevant to Chemistry 260, please consult the Chemistry 260/261 Policy Document in Canvas.