The first quarter of the course will cover the subject of chemical kinetics, which provides a quantitative framework for examining the rates of chemical reactions. Students will learn about the connection between the detailed reaction mechanism and the experimentally observed rate law. We will also introduce the concept of an energy surface to understand how reaction rates are controlled by the energies of reactants, as well as their concentrations. The bulk of the course will be devoted to a discussion of the fundamental principles of quantum mechanics (QM) and its application to modern chemical science. QM is the theory that underlies our current conceptions of atomic and molecular electronic structure, bonding, spectroscopy, periodic trends, and chemical reaction dynamics. Simple QM models are useful for the insight they offer and more rigorous applications, often involving powerful computers, have a predictive capability that can illuminate even complex systems. The theories and applications of kinetics and QM are quantitative in nature and will require familiarity with mathematical methods. In some instances, computers with software for data plotting, analysis, symbolic and numerical mathematics, and molecular modeling will be employed to facilitate an understanding of the concepts.
CHEM:4432:000A Physical Chemistry II Spring 2019

<table>
<thead>
<tr>
<th>Grading</th>
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<tbody>
<tr>
<td>Exam 1, Issued: Tuesday, 2/12 Due: Friday, 2/15</td>
<td>15%</td>
</tr>
<tr>
<td>Exam 2, Issued: Tuesday, 3/26 Due: Friday, 3/29</td>
<td>15%</td>
</tr>
<tr>
<td>Exam 3, Issued: Tuesday, 4/23 Due: Friday, 4/26</td>
<td>15%</td>
</tr>
<tr>
<td>Problem Sets, approximately 1 per week</td>
<td>35%</td>
</tr>
<tr>
<td>Final Exam (date, time, and room TBA)</td>
<td>20%</td>
</tr>
</tbody>
</table>

With the exception of the Final Exam, exams will be in a “take-home” format, issued and due by 5 PM on the dates indicated above. Exams will be open-book/resource, and you are allowed to discuss the exam with peers, myself, and the TA. However, every student must complete their own unique solutions. For problems based in mathematics, all work must be shown, alongside descriptions of the mathematical operation and rational for using it. Examples will be provided. All written responses must be original and must reference any texts or other resources used. Each exam will include a Statement of Integrity to be signed by the student to hold students accountable to the expectations and rules of the exams.

The final exam will be held as a closed-book paper and pencil exam, as to be scheduled by the Registrar. Students will be allowed to bring a standard letter-sized sheet of paper, with anything written (or typed) on both sides, with them to the exam. The question format will be shorter than that of the problem sets and take-home exams, and the points assigned to each question will be made clear on the exam form. A practice exam will be provided to give an example of the level of difficulty.

A Word about the Date and Time of the Final Exam: The final examination date and time will be announced during the first half of the semester by the Registrar. I will announce the final examination date and time for this course at the course ICON site once it is known. Do not plan your end of the semester travel plans until the final exam schedule is made public.

Given the relatively small class size, I do not expect a clear distribution to emerge. Exams and problem sets will be scored out of 100 points, and the points will be converted to grades based on demonstrated mastery of course learning objectives. Problem sets and exams will include a range of problems, some of which will be identical or closely related examples from lecture, and others that will require you to extrapolate beyond what was covered explicitly. After each exam, I will provide feedback on how numerical scores relate to grades, and you are also welcome to bring any questions about your grade status by scheduling an appointment to discuss. Final grades will use + and - designations, with A+ reserved for exceptional cases.
Cancellations Since course exams will be in the above described take-home format, we will cancel one lecture per exam. The specific dates of these canceled lectures will be announced in class and posted on ICON. Discussion sessions may also be canceled during exam weeks.

Regrades If you want any of your work (problem sets or exams) considered for regrading, you must bring it to our attention within a week of when the assignment/exam is returned. In addition, you must, on a separate sheet of paper, clearly state why you want your work considered for regrading. This explanation should include a re-working of the problem in detail, with your notes on where and why you think more points should be awarded. An exception to this rule is if you think your points are simply mis-added, in which case you still must bring your paper to an instructor within a week of the return date but you are not required to write up an explanation sheet.

Prerequisites and Required Background Material
The prerequisites for this course include calculus and elementary physics. I will make every effort to introduce important mathematical and physical concepts before they are used in class, but these elements are an essential part of physical chemistry. You will be expected to master and apply the necessary mathematical methods to be successful in this course.

Expected Student Workload
This is a 3 credit hour course, so under University policy you should expect to spend six hours per week outside of class on activities related to this course.

Make-Up Exams
If you are ill or a personal emergency makes it impossible to complete an exam, please contact an instructor as soon as possible. If you are aware of a conflict in advance, it may be possible to take the exam early. Permission to take a make-up exam will require an Explanatory Statement of Absence.

Timely Completion of Assignments
Problem sets turned in late will not be accepted for a grade without a completed Explanatory Statement of Absence. All problem sets are due at the beginning of class on the date noted on the assignment. If you miss class, you may turn work in to the Chemistry Center. Unless an Explanatory Statement of Absence is also provided, a late penalty will be applied. Repeated submission of late assignments will result in a larger penalty.
Expectations for the Completion of Problem Sets
The problem sets are an integral part of this course. If you miss turning in 4 or more problem sets, you will automatically receive a failing grade (F) for the course, regardless of your standing otherwise. The only exception to this policy is if excused absences interfere with problem set due dates, and in such cases absences must be accounted for as detailed in the section on Attendance.

In Class Work For most problem sets, a portion of the work will be assigned and completed during class time. While you are not required to attend class, failure to attend on days during which in-class work is conducted will result in losing those point, unless you can provide an explanation of absence. If you miss class on an assignment or exam due date, or on a day in which class work is carried out, you must complete an Explanatory Statement of Absence form. These forms are available through the University Registrar.(http://registrar.uiowa.edu/)

Discussion of Problem Sets and Take Home Exams You can discuss the problem sets and take-home exams with your peers. However, copying work is not discussion. All written work must be individually prepared. Work that is copied from another student is not acceptable. Please see the section in the Student Academic Handbook on Rights and Responsibilities for University policy on academic misconduct.

General Advice on Completing Assignments When answering a question, one needs to know he audience for the answer. In preparing problem set solutions, direct your answers towards a classmate who is “somewhat behind” you in terms of studying. Your solutions to each problem set should be detailed enough to serve as a study aid to another student in class whose understanding of the materials is less proficient than your own. Err on the side of explaining a little too much, or showing a bit too much work. Also be sure that your solutions are easily readable and that you use the same symbols/notation as used in class and in the text. This will ensure that you receive optimal point credit for your solutions. SEM will personally grade a portion of each problem set and will review the quality of your solutions. You will be given feedback, if necessary, on the quality of your problem set solutions. If you fail to address that feedback in subsequent assignments, you will lose points accordingly.
Safe Zone Statement
I am part of the Safe Zone Project community network of trained University of Iowa faculty/staff/students who are available to listen and support you in a safe and confidential manner. My goal is to help you be successful and to maintain a safe and equitable campus. The purpose of the Safe Zone Project is to identify members of the University community who will model support, affirmation, and inclusion of LGBTQ people. Participants who complete this program are choosing to be visible allies and to be trained to be effective resource people for their workplace and classroom.

I want to emphasize again that if you have any questions or concerns, please communicate those to me so that I can help you. I am available and I will be happy to talk with you.
Administrative Home
The College of Liberal Arts and Sciences is the administrative home of this course and governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Different colleges may have different policies. Questions may be addressed to 120 Schaeffer Hall, or see the CLAS Academic Policies Handbook at http://clas.uiowa.edu/students/handbook.

Electronic Communication
University policy specifies that students are responsible for all official correspondences sent to their University of Iowa e-mail address (@uiowa.edu). Faculty and students should use this account for correspondences. (Operations Manual, III.15.2. Scroll down to k.11.)

Accommodations for Disabilities
A student seeking academic accommodations should first register with Student Disability Services and then meet with the course instructor privately in the instructor’s office to make particular arrangements. See http://sds.studentlife.uiowa.edu/ for more information.

Academic Honesty
All CLAS students or students taking classes offered by CLAS have, in essence, agreed to the College’s Code of Academic Honesty: "I pledge to do my own academic work and to excel to the best of my abilities, upholding the IOWA Challenge. I promise not to lie about my academic work, to cheat, or to steal the words or ideas of others; nor will I help fellow students to violate the Code of Academic Honesty.”
Any student committing academic misconduct is reported to the College and placed on disciplinary probation or may be suspended or expelled (CLAS Academic Policies Handbook).

CLAS Final Examination Policies
The final examination schedule for each class is announced by the Registrar generally by the fifth week of classes. Final exams are offered only during the official final examination period. No exams of any kind are allowed during the last week of classes. All students should plan on being at the UI through the final examination period. Once the Registrar has announced the date, time, and location of each final exam, the complete schedule will be published on the Registrar’s web site and will be shared with instructors and students. It is the student’s responsibility to know the date, time, and place of a final exam.

Making a Suggestion or a Complaint
Students with a suggestion or complaint should first visit with the instructor (and the course supervisor), and then with the departmental DEO. Complaints must be made within six months of the incident (CLAS Academic Policies Handbook).
Understanding Sexual Harassment
Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. See the UI Office of the Sexual Misconduct Response Coordinator for assistance, definitions, and the full University policy.

Reacting Safely to Severe Weather
In severe weather, class members should seek appropriate shelter immediately, leaving the classroom if necessary. The class will continue if possible when the event is over. For more information on Hawk Alert and the siren warning system, visit the Department of Public Safety website.

*These CLAS policy and procedural statements have been summarized from the web pages http://www.clas.uiowa.edu/ of the College of Liberal Arts and Sciences and The University of Iowa Operations Manual.