

**Chemistry 4011/8011**

*Mechanisms of Chemical Reactions*

Fall 2006

MWF 10:10 am – 11:00 am, Smith 331  
*and optional review sections TBA*

**Instructor:** Professor T. Andrew Taton  
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Office hour: TBA  
*or by appointment*

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Office hour: TBA

**Materials:** E. V. Anslyn, D. A. Dougherty, *Modern Physical Organic Chemistry* (University Science Books, Sausalito, CA, 2006). *Required.*

M. R. Wright, *An Introduction to Chemical Kinetics* (John Wiley and Sons, Chichester, UK, 2004). *Optional. On reserve, Walter Library.*

T. H. Lowry, K. S. Richardson, *Mechanism and Theory in Organic Chemistry*, 3<sup>rd</sup> ed. (Harper and Row, New York, 1987). *Optional. On reserve, Walter Library.*

**Class Website:** <http://www.chem.umn.edu/groups/taton/chem5011/>.

**Course Summary:**

“Mechanisms of Chemical Reactions” is intended to prepare you to (1) elucidate the mechanisms of chemical reactions based on kinetic and thermodynamic principles and collected data, and (2) be able to evaluate mechanistic arguments made in the literature. The course is meant to be broadly applicable to many types of chemistry—organic, physical, materials, computational, etc.—and will focus on basic principles of reactions rather than specific kinds of molecules.

<b>Grading:</b>	5011 (3 cr):	66%	Exams
		33%	Problem sets
	8361 (4 cr):	50%	Exams
		25%	Problem sets
		25%	Group project/presentation

*(All materials, including a full lecture schedule, will be posted to the web.)*

**Exams:** The three exams will be worth 100 points each. All exams will take place during class time. There will be no “final exam” for this course, though the third exam will take place during the time normally scheduled for the final. Exams will be *open book* and *open note*; you may bring any materials you see fit to exams. However, student cooperation (including sharing materials or notes) on exams is prohibited. You may be excused from taking an exam due to jury duty, subpoenas, military service, religious holidays, and participation in school sports events only if the instructor is notified two weeks in advance. You may also be excused in case of illness (as verified by a doctor's note) or death in the immediate family (be prepared to verify) if the instructor is notified within 24 hours after the exam.

**Problem Sets:** There will be nine problem sets, each worth 15 points. Problem sets will be made available on the course website at least a week in advance of the due date, and earlier in most cases. Answer keys will be available on the web on the due date, and the problem sets will be discussed in the following discussion section. Because the answer keys will be available immediately after the problem sets are due, sets cannot be turned in late. Problem sets will primarily be graded on effort, and intelligent attempts to answer all problems will receive full credit. With an added fudge factor of 15 points, total credit for all problem sets will sum to 150 points. Working together on problems is *highly* encouraged, but you must submit your own copy of your own solutions to receive credit. Identical computer printouts of the same answer from different students will not be accepted. You will probably end up doing some of the work for the problem sets at the Chemistry Department Microcomputer Lab (<http://www.chem.umn.edu/microlab/>); you should become familiar with this resource.

**Group Project:** Students enrolled in Chem 8011 (4 cr) will also be assigned a group project, worth a total of 150 points. Groups of four students will select a specific research topic in chemical kinetics and/or thermodynamics, and will present this topic to the class as a group. In addition, each student will write a brief (2-page) review piece on one aspect of the topic.

**Workshops:** In addition to the graded items above, we will be spending some class periods working together on “Workshops”, problems that are designed to help you understand class material. Although materials for these will be posted to the course website like everything else, they are in-class exercises that will not be evaluated or graded.

All students and instructors should be reachable at their University-wide e-mail accounts. If you normally use a departmental or private e-mail account, you should set up your University-wide account to automatically forward messages to this other address. You can do this most easily through the account settings page, <http://www.umn.edu/validate>.

Academic integrity is essential to a positive teaching and learning environment. All students enrolled in University courses are expected to complete coursework responsibilities with fairness and honesty. Failure to do so by seeking unfair advantage over others or misrepresenting someone else's work as your own can result in disciplinary action. More information on the definition and consequences of academic dishonesty can be found at the Office for Student Academic Integrity website (<http://www.osai.umn.edu/>). In this course, direct copying of homework assignments or lab reports, or any cooperation on exams, will be considered dishonest. Any student responsible for scholastic dishonesty can be assigned a penalty up to and including an "F" or "N" for the course. If you have any questions regarding the expectations for a specific assignment or exam, please ask.

Our goal is to be as available and as accommodating as we can be. If you feel you are having troubles or concerns about the class, please feel free to contact Andy or Marc. If you feel for any reason that we are not taking your concerns seriously, and that this is negatively impacting your learning, the Student Dispute Resolution Center (<http://www.tc.umn.edu/~sos/>) makes both informal (ombudsman) and formal (advocate) representatives within the University available for students to share their concerns with.

We hope you learn a lot this semester in our course!