

Chemistry 2081, Section 001
Chemistry for the Life Sciences III
Fall 2017
MWF 11:15 – 12:05pm, 220 Bruininks

Instructor: Dr. Angela Perkins

Office: 425 Smith Hall

Email: aperkins@umn.edu (best way to contact me)

Website: All class information will be posted on the course website on Moodle - access through <https://moodle2.umn.edu/>

Office Hours: See Moodle Site as dates/times will be set after the first week of the semester.

If office hours don't work for you or you want to be sure to chat one-on-one, please email to set up an appointment.

Materials: *Organic Chemistry: Principles and Mechanisms* by Joel Karty, 2nd Ed. (required); Access to Online Homework (OWLv2, Cengage, Required); Molecular Model kit (very highly recommended); iClicker2 – ISBN 9781429290471 (Required)

General Course Information: Chemistry 2081 with accompanying 2085 lab is the third semester in a three-semester sequence of courses designed to provide a strong chemistry background for students pursuing degrees and careers in the life sciences. Upon completion of these courses, the desired outcome is that the student (1) can identify, define and solve problems; (2) can locate and critically evaluate information; (3) has mastered a body of knowledge and a mode of inquiry; (4) can communicate effectively; and (5) has acquired the skills for effective and life-long learning.

Prerequisite Material: To register/remained registered in this course, you must meet all of the following criteria:

1. Registration in both 2081 (lecture) and 2085 (lab) during the same semester is required
2. Completed with a C- or better in CHEM 1082 lecture.
3. If you do not meet these criteria, you should report your situation to the staff in Smith 115 (624-0026) immediately. They handle all registration issues pertaining to this course.

Calculating Final Grades: Your final grades will be calculated based on the three hour exams, the final exam, the online assignments and in class participation as described below.

Final Grade:	Three exams (100 points each)	300
	OWL Homework	70
	Class Participation (iClicker Questions)	30
	Final exam points	<u>200</u>
	Total Points possible	600

Letter grades (A-F) will be assigned based on the cumulative points received during the semester. The B-/C+ borderline will be set close to the class average.

Exams: Three exams (60 minutes each) will be given on the dates provided. The final exam is 2 hours. All exams will start promptly at the time listed so do not be late as you will not be granted additional time. You must have your student ID (or other form of ID) with you to take the exams. All exams will be closed book and closed notes and no other study aids are permitted.

Exam I	Monday, October 2 nd , 4:40 – 5:40pm (1 hour)
Exam II	Monday, October 30 th , 4:40 – 5:40pm (1 hour)
Exam III	Monday, December 4 th , 4:40 – 5:40pm (1 hour)
Final Exam:	Wednesday, December 20 th , 1:30 – 3:30pm (2 hours)

All examinations must be taken at the times indicated above. Absolutely NO late make-up exams will be given. See below on policy for exam absences.

In the case of a University sponsored activity that will require the student to be out of town, it may be possible to take the exam with the coach, team academic advisor, or another instructor as the proctor. Please see the instructor about such conflicts *as soon as possible* so that arrangements can be made.

Online Assignments: These will be due online over the course of the semester. These assignments will cover the material that we are covering in class. You will need to have an active OWLv2 account to complete these assignments (the one from last semester will work). All graded assignments will be listed and submitted on this website. **No late homework will be accepted (no exceptions).** There will also be assignments that you can use for practice; no points will be awarded for their completion. There will be no extensions given for failure to complete your homework on time. These assignments are for your benefit and are designed to help you keep pace with the material that we are covering in lecture.

Class Participation: During lecture almost everyday we will work problems. You will be encouraged to work with those around you to discuss solutions. Your responses to some of these problems will be monitored using the iClicker2 system and will be part of your grade. You will receive credit for participation (0.3 pts) during the in-class problems, as well as for correct answers (0.2 pts). These questions will help me to gauge student understanding of the course material and to reinforce information as needed. You must correctly register your iClicker device to receive credit. You can find information about iClicker2 registration on the course Moodle site. If you do not wish to purchase an iClicker, you may alternatively use Reef Polling, which will allow the usage of an Internet capable mobile device, laptop or tablet for participation. Please see the Moodle site for instructions on setting up Reef Polling and comments about wireless network. It is your responsibility to make sure that you bring your device every day and that it is connected. I will not go in and manually give points to anyone for any reason. If for any reason you miss class, you cannot make up iClicker participation points, however, over the course of the semester, there will be ~35 points possible, but you will only be awarded a maximum of 30 points.

Policy on Exam Absences: A student can be excused from one midterm exam for a true emergency, serious illness, or University sponsored activity. The student should contact the instructor as soon as circumstances allow and appropriate documentation **must** be provided (Dr's note, note from coach, etc). If the circumstances are deemed as appropriate for missing the exam, the unweighted average score of all other midterm exams and of the final exam in the course will be used in place of the missed exam. If circumstances lead to a student missing more than one midterm exam, the student should immediately schedule a meeting with the instructor to discuss any available options. **There will be no late makeup exams given – NO EXCEPTIONS!!**

The final exam can only be missed due to illness or family emergency and documentation again must be provided. However, in cases where the final exam is missed an incomplete ("I") final grade will be assigned according to the policy outlined below.

Policy on an Incomplete (I) Grade: An incomplete grade will be assigned only when the final exam is not taken **AND** the work completed to that date is satisfactory (C- or better). An incomplete grade can only be corrected by taking a regularly scheduled 2081 final exam in the next available semester. If the final exam is not taken and/or the work completed to that date is not satisfactory, and **F** grad or an **N** grade will be given depending on whether the course is taken under the A-F or S-N grading system. **The "Agreement for Making Up and I Grade" form must be completed and signed by the instructor, student, and a third party within 48 hours after the final exam.**

Scholastic Dishonesty Policy: “Scholastic dishonesty is any act that violates the rights of another student with respect to academic work or that involves misrepresentation of a student’s own work. Scholastic dishonesty includes (but is not limited to) cheating on assignments or examinations, plagiarizing (misrepresenting as one’s own, anything done by another), submitting the same or substantially similar papers (or creative work) for more than one course without consent of all instructors concerned, depriving another of necessary course materials, and sabotaging another’s work.” – *Classroom Grading and Examination Procedures*. College of Liberal Arts.

A student guilty of scholastic dishonesty will be awarded a grade of zero (0) for the exam involved. Additionally, the incident will be reported to the Office for Student Academic Integrity and to the college in which the student is enrolled.

As a student at the University you are expected to adhere to the Board of Regents Policy: Student Conduct Code. To review this policy see: http://regents.umn.edu/sites/regents.umn.edu/files/policies/Code_of_Conduct.pdf

How to do well in this course:

- **Be prepared for lecture.** Briefly scan the material that is going to be covered in the lectures before you come to class. It helps to have a basic knowledge of what is being discussed in class and can help you tailor questions for material you don’t understand.
- **Participate in Class.** Ask questions if there is something that you don’t understand.
- **Study the material covered in class.** It is helpful to reread the material covered in class while the lecture is still fresh in your mind. If there is something you do not understand, you should ask for help as soon as possible.
- **Work out the assigned problems.** Chemistry can only be mastered by applying concepts learned and the best way to do this is to work problems. Make sure you understand the concepts presented in the chapter and then attempt the problems related to these concepts. The best way to work the problems is without the aid of the solutions manual.
- **Participate in a study group.** Study groups are an effective way of succeeding in this class. Forming a group of 2-3 other students from the class can be a great tool for understanding what you have learned and discover with which concepts you are still struggling. Do not go to the study group hoping to learn the material you have not studied, rather complete your studying and take questions to the study group.
- **Get help early.** This class moves very quickly and we cover a lot of material each week, so if you get lost you need to be proactive about getting the help that you need, whether that means going to the tutor room or coming to office hours with questions.

Tutor Hours: Tutor hours are held in 124 Smith Hall throughout the semester. These hours are limited so come prepared with direct questions. A reminder that the purpose of a tutor is to help you learn, not simply give you answers to questions or problems. The tutors are instructed, in fact, to ask YOU questions that will help you understand what concept you are missing that is preventing you from solving a particular problem. Self-discovery will enhance the depth and retention of your knowledge. The schedule will be posted on the course Moodle site.

Private Tutors: The department also maintains a list of people who are available for private tutoring. This list can be obtained from 115 Smith Hall during business hours or you can find it on the course website. The cost/hour for a private tutor is negotiated between you (the student) and the tutor.

Problems: For each chapter a series of problems have been chosen from within and at the end of each chapter. These problems can be found on the course website. These problems will be similar in concept and difficulty to the ones that you will see on the exams. These problems **will not be** collected but are to help you understand the concepts and practice the material, so feel free to do as many or few as needed to understand the concepts presented in the chapters and in class. I generally choose a large number of problems because the best way to learn and understand the concepts is to work problems and also because some students appreciate a lot of examples. Again, do as many or as few as you need to understand the concepts.

Policy Statements:

Overlapping and Back-to-Back Courses: Enrolling in overlapping or back-to-back courses that do not allow for enough travel time to arrive at our class meetings on time is prohibited. For more information see:

<http://policy.umn.edu/Policies/Education/Education/Overlappingclasses.html>

Student Mental Health and Stress Management: As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. University of Minnesota services are available to assist you with addressing these and other concerns you may be experiencing. You can learn more about the broad range of confidential mental health services available on campus via <http://www.mentalhealth.umn.edu/>.

Teaching and Learning: The materials provided in this course are intended only for the students officially enrolled in this section and are to be used to learn and practice the course material. Disseminating class notes, videos, exams, etc.... beyond the classroom community or accepting compensation (in the form of cash or trade, such as access to study website) undermines instructor interests in their intellectual property while not substantially furthering instructor and student interests in effective learning. Such actions violate shared norms and standards of the academic community and are not allowed. For additional information please see <http://policy.umn.edu/Policies/Education/Education/Studentresp.html>

Disability Resource Center: Students with special needs should contact the Disability Resource Center (<https://diversity.umn.edu/disability/>), which will provide a letter to share with the instructor on how those needs shall be accommodated.

Sexual Harassment:

<http://regents.umn.edu/sites/regents.umn.edu/files/policies/SexHarassment.pdf>

Equity, Diversity and Equal Opportunity:

http://regents.umn.edu/sites/regents.umn.edu/files/policies/Equity_Diversity_EO_AA.pdf

Lecture Schedule:

Below is a tentative outline of the topics that we will be discussing this semester.

Date	Topic	Karty Readings
9/6	Brief Mechanism Review	Ch 7 & 8
9/8	Infrared Spectroscopy	15.4 - 15.6
9/11	NMR Spectroscopy	16.1 - 16.5
9/13	¹ H NMR Spectroscopy	16.6 - 16.11
9/15	¹ H NMR, Integration and Spin-Spin Splitting	16.11
9/18	¹³ C NMR, Mass Spectrometry	16.13, 16.16 - 16.20
9/20	Electrophilic Addition to C=C bonds, H-X	N2.1, 11.1 - 11.5
9/22	Hydration Reaction, Alkyne Addition	11.6 - 11.8
9/25	Addition to conjugated dienes	11.9 - 11.11
9/27	Electrophilic Addition to alkenes, cyclic transition states	12.1 - 12.4
9/29	Epoxides and Hydroboration	12.5 - 12.8

Date	Topic	Karty Readings
10/2	Q & A Session for EXAM I (Ch 15.4-15.6, 16, 11, & 12)	
10/4	Organic Synthesis	13.1 - 13.6
10/6	Practice Synthesis problems	
10/9	Extended pi-Systems, Conjugation, Aromaticity	14.1, 14.3, 14.6
10/11	Heterocyclic Aromatic Compounds	14.7 - 14.11
10/13	UV-Vis	15.1 - 15.3
10/16	Nucleophilic Addition to C=O bonds, Strong Nucleophiles	17.1 - 17.3
10/18	Hydride Reagents	17.3 - 17.4
10/20	Organometallic Reagents, Wittig Reactions	17.5 - 17.8
10/23	Direct vs Conjugate Addition	17.10 - 17.15
10/25	Nucleophilic Addition to C=O Bonds, Weak Nucleophiles	18.1 - 18.2
10/27	Acetals, Sugar Acetals	18.2, 18.14
10/30	Q & A Session for Exam II (Ch. 13, 14, 15.1-15.3, 17, 18.1-18.2, 18.14)	
11/1	Aldol Reactions and Aldol Condensations	18.4 - 18.6
11/3	Crossed Aldol Reactions, Intramolecular	18.7 - 18.9
11/6	Michael Reactions, Catalytic Reductions	18.10 - 18.13, 19.5
11/8	Catalytic Reductions and Oxidations of Alcohols	19.5 - 19.6
11/10	Nucleophilic Addition/Elimination Reactions - Strong Nucleophiles	20.1 - 20.3
11/13	Reaction of Amides, Haloform Reaction, Hydride Reagents	20.4 - 20.7
11/15	Carboxylic Acid Derivatives - Organometallic Reagents	20.8
11/17	CA Derivatives - weak nucleophiles	20.1 - 20.5
11/20	Transesterification, Claisen Condensations	21.7, 21.9
11/22	Malonic Ester & Acetoacetic Ester Synthesis, Peptide Synthesis	21.10, 21.13-14
11/24	NO CLASS THANKSGIVING BREAK	
11/27	Electrophilic Aromatic Substitution	22.1 - 22.4
11/29	Friedel-Crafts Alkylation, Nitration	22.5 - 22.7
12/1	Regiochemistry of EAS	23.1 - 23.4
12/4	Q & A Session for Exam III (Ch 18.4-18.12, 19.6-19.7, 20, 21, 22)	
12/6	Activating and Deactivating Groups	23.5 - 23.8
12/8	Nucleophilic Aromatic Substitution	23.10
12/11	Reactions involving Free-Radicals, Halogenation	25.1 - 25.3
12/13	Allylic Bromination, Addition to Alkenes	25.4 - 25.5
12/20	FINAL EXAM 1:30 - 3:30pm (Cumulative)	