

**ORGANIC CHEMISTRY I: CHEMISTRY 341 SYLLABUS****Summer 2013**

Dr. Craig P. Jasperse	web: <a href="http://www.mnstate.edu/jasperse/">http://www.mnstate.edu/jasperse/</a>
Office: Ladd 101B	e-mail: <a href="mailto:craig.jasperse@ndsu.edu">craig.jasperse@ndsu.edu</a> or <a href="mailto:jasperse@mnstate.edu">jasperse@mnstate.edu</a>
Telephone: (701) 231-8469	Office Hours: M-F 12:00-1:30 (when not grading)

Required Text and Materials:

- 1) Text: "Organic Chemistry", 8th edition, Carey and Giuliano (Note: an alternative is to buy a cheap version of "Organic Chemistry" by Leroy Wade, either the 6<sup>th</sup> or 7<sup>th</sup> edition. See "required text and materials" on website for information. <http://web.mnstate.edu/jasperse/Chem341/Required%20Text%20and%20Materials.pdf>)
- 2) Solutions Manual: "'Student Solutions Manual to accompany Organic Chemistry" Eighth Edition, by N. T. Allison, R. M. Giuliano, R. C. Atkins, and F. A. Carey." (The text and solutions manual may be available as a bundle at Varsity Mart. If you use Wade, get solutions manual for them.)
- 3) **On-line "Sapling" homework Problems:** You will be required to buy access to an on-line homework system (see later page in syllabus for details.) These problems will be computer-graded, will give you some practice and sometimes tips, and will help to keep you from procrastinating.

Test Schedule

Test 1, Wednesday, June 26	Ch 1 Ch 2 Ch 3	Structure Determines Properties Alkanes and Cycloalkanes: Introduction to Hydrocarbons Alkanes and Cycloalkanes: Conformation and cis-trans Stereoisomers
Test 2, Friday, July 12	Ch 4 Ch 7 Ch 8	Alkyl Halides and An Overview of Chemical Reactions Stereochemistry Reactions of Alkyl Halides; Nucleophilic Substitutions and Eliminations
Test 3, Wednesday, July 24	Ch 5 Ch 6	Alkenes: Structure and Preparation: Elimination Reactions Alkenes: Addition Reactions and Other Alkene Reactions
Test 4, Friday, Aug 2	Ch 10 Ch 11 Ch 12	Conjugation in Alkadienes and Allylic Systems Arenes and Aromaticity Reactions of Arenes: Electrophilic Aromatic Substitution

Grading Summary

		<u>Tentative grades</u>
Tests 1-4	400 points (4 x 100)	A 90%
Take-Home Paper "Quizzes"	27 points	B 80%
Online Homework	73 points prorated	C 70%
		D 56%

+5 possible extra credit points for perfect attendance

- **The instructor may lower but will not raise the percentage required for a letter grade.**

**Jasperse website:** <http://www.mnstate.edu/jasperse/> This will provide links to:

Notes for use in class	Recorded Lectures	Sapling	Quizzes
Practice Tests	Jasperse Schedule	Textbook Info	Miscellaneous

Take-Home "Quizzes": <http://web.mnstate.edu/jasperse/Chem341/Quizzes/Chem341Quizzes.html>

Four "quizzes" will be required, and there are several others that can be used as practice.

Attendance: Faithful attendance is important (and I do care if you come!) To reinforce your self-discipline, perfect attendance will be rewarded with 5 points of extra credit. Be sure to sign the attendance sheet each day!

**Final Exam:** The last test will **not be cumulative**. (Unless class prefers cumulative final?)

**Recorded Lectures and On-Line Availability:** I will try to record all of the regular class periods and post the movie-versions. I will also record and post **practice test sessions**, and sessions involving some extra problems or comments or pre-test tips.

**Homework and Study Strategy:** All assigned book problems represent what I consider to be reasonable test-level problems. There may be a few that are trickier than I'd put on a real test, but the majority are ones you ought to be able to do. All have worked-out answers in the Solutions Manual. **The homework is a great way to practice problem solving, assess your progress, and prepare for tests.** Since solutions are available, I will not collect the book homework. **The few take-home assignment problems that I collect and grade are no substitute for doing book homework problems! Likewise the on-line homework will not be sufficient.**

Putting off the extensive information in organic chemistry will only make it harder on you. After each class, try to study the day's notes and work all of the assigned book problems.

Some practical study thoughts:

1. General university policy is that an average student in an average class should study for two hours out of class for two hours in class to get an average grade.
  - Fact: Organic chemistry isn't really an average class!
2. I suggest reviewing the class notes and practice problems ASAP after a day's class, and going through the material at least twice.
3. Many students print an extra copy of class notes, and try to redo all the in-class problems on their own.
4. I suggest working Sapling/book problems associated with the sections covered in class right after that.
5. Reading the book: the textbook is a support resource. If you didn't understand some of the material in class, the book will frequently have a more complete and detailed discussion that will help you understand things.
6. If I decide I'm not going to take the time to study the class notes, to do Sapling and book problems, and to read the book, which one should I sacrifice first? Probably the book reading!
7. The practice tests are excellent rehearsal for the real tests.
  - <http://web.mnstate.edu/jasperse/Chem341/Practice%20Tests/Chem341PracticeTests.html>

### **Class E-Mail List**

An email list may be used to notify you of special scheduling information or other miscellany. **The list uses your NDSU e-mail address.** You can have NDSU emails forwarded to a different address. (See the Information Technology desk, IACC-150, this building.)

- Note: A test e-mail has already been sent. If you did not receive it, it probably means either that your NDSU e-mail is not the address you look at and is not being forwarded to the address you look at, or else that your junk filter junked it!

### **In-Class Notes**

[http://web.mnstate.edu/jasperse/Chem341/Classbook%20Chem%20341/Classbook%20Chem341%20\(all\).pdf](http://web.mnstate.edu/jasperse/Chem341/Classbook%20Chem%20341/Classbook%20Chem341%20(all).pdf)

I have a very thorough set of notes that can be used in class. Included will be numerous examples and practice problems that I/we will work in class together. You should print the notes (NDSU's printers can print them on both sides of a page), 3-fold punch them, and keep them organized in a 3-ring binder.

### **Academic Honesty**

It is assumed that students at NDSU have the integrity to complete tests on their own. Any student who is found to have cheated on a test will receive an F for that test or an F for the course, depending on the circumstances. A second infraction will result in an automatic F for the course. For a full description of the NDSU Code of Academic Responsibility and Conduct, see <http://www.ndsu.nodak.edu/policy/335.htm>.

**Special Accommodations** Students with disabilities who believe they may need an accommodation in this class are encouraged to contact the instructor as soon as possible.

<b>Chemistry 341, Jasperse, Summer 2013 (38 class days)</b>			Reading
	Date	Topic	Assignment
	June 10	NO CLASS	
1.	June 11	Intro. Octet Rule, Lewis Structure, Hybridization, Bonding	1.1-5
2.	June 12	Formal Charge, Resonance, Hybridization + Shape; Drawing 3-D Shapes	1.6-11
3.	June 13	Acid-Base, Mechanism.	1.12-18
4.	June 14	Hybridization, Rotation, Isomerism, Polarity, Intermolecular Forces, Solubility Quick skim 2.1-4	2.1-7, 17,22.
5.	June 17	The Organic Functional Groups.	4.1, 4.6
6.	June 18	Formulas, Nomenclature, Conformations of Alkanes	2.5-14
7.	June 19	Conformations and Stability of Acyclic Alkanes and Cycloalkanes	3.1-6
8.	June 20	Conformations and Stability of Cyclohexanes, Catchup	3.7-13
9.	June 21	Alkane Chlorination. Factors to Think About in a Chemical Reaction. Quick skim 3.13-15. Skip 4.1-14 at this time.	4.15-19
10.	June 24	Transition States, Multistep Reactions, Halogenation of Higher Alkanes.	4.15-19
11.	June 25	Reactive Intermediates (Radicals, Cations, Anions)	4.10,17
12.	June 26	Test 1. Chapters 1-3.	
13.	June 27	Chirality, R/S Classification of Chiral Carbons.	7:1-6
14.	June 28	Miscellaneous Stereochemistry Skip 4.1-14 at this time. Quick skim 7.7,9,16,17	7:8,10
15.	July 1	Diastereomers; More than One Chiral Carbon	7.11-15
16.	July 2	Nomenclature, Structure, Properties, Reactivity of Alkyl Halides.	4.2,4-6
17.	July 3	The Sn2 Substitution Reaction.	8.1-5
	July 4	NO CLASS	
18.	July 5	The Sn1 Substitution Reaction.	8.6-12
19.	July 8	E1 and E2 Eliminations. Substitution vs. Elimination? Cation rearrangements	5.14-18
20.	July 9	Alkenes: Structure, Nomenclature, Isomers.	5.1-7; 13.25
21.	July 10	Alkene Stability; Synthesis.	5.8-13
22.	July 11	Synthesis of Alkenes; Classifying/Recognizing Reaction Mechanisms; Alkenes	catchup
23.	July 12	<b>Test 2. Chapters 4, 7, 8, 5</b> Skim: 5.17	<b>Test</b>
24.	July 15	Addition of H-Cl, H-Br, and H-OH to Alkenes.	6.1-6,18
25.	July 16	Oxymercuration/Dermercuration; Hydroboration/Oxidation; Hydrogenation	6.9-13, p.275
26.	July 17	Addition of Halogens, Formation of Halohydrins; Epoxidation <u>Drop Deadline</u>	6.14-17
27.	July 18	Oxidation Reactions of Alkenes	6.19,20
28.	July 19	Catchup; Practice Problems Skim: 6.21	Catchup
29.	July 22	Intro; Conjugation, Molecular Orbitals, Dienes, Allylic Cations, Diene Additions	10.1-7, 11.13,14
30.	July 23	More allylic cations/radicals/conjugation and Applications; Diels-Alder Reaction	10.8-14
31.	July 24	<b>Test 3. Chapters 5, 6</b>	<b>Test</b>
32.	July 25	Diels-Alder Reaction, Aromaticity	10.15-17
33.	July 26	Aromaticity; Huckel's Rule, Complex Aromaticity, Application, Nomenclature Skip: 11.10,16,17	11.1-9,18-23
34.	July 29	Electrophilic Aromatic Substitution: Intro, Mechanisms	12.1-8
35.	July 30	Reactions Detailed: Halogenation, Nitration, Sulfonation, Alkylation, Acylation	12.9-16
36.	July 31	Catchup; Addition to Disubstituted Benzenes; Synthetic Applications	11.11-12
37.	Aug 1	Synthetic Applications; Practice	Practice
38.	Aug 2	<b>Test 4. Chapters 10, 11, 12</b> Skip: 12.17-22	<b>Test</b>

Tentative  
Letter  
Grades:  
A: 90%  
B: 80%  
C: 70%  
D: 56%

## CHEMISTRY 341 PROBLEMS SUMMER 2013

Dr. Craig P. Jasperse

These assume you are using Carey and Giuliano version 8. (I have lists that are appropriate if you instead have the 6<sup>th</sup> or 7<sup>th</sup> version of Wade. Contact me if that's your situation, or see:

<http://web.mnstate.edu/jasperse/Chem341/Other%20Books-Problems%20and%20Readings/Other%20Books-Problems%20and%20Readings.htm>

<u>Chapter</u>	<u>Recommended Book Problems</u>
	<u>Test 1</u>
1	1, 3-8, 10, 12-19, 22, 24-26, 29, 30, 31a, 33, 37, 41, 42, 44, 46, 47, 48, 50-52, 54-57, 60, 65, 69-71, 75-78
2	3-5, 8, 10, 11a,b, 18, 19, 21, 22a,b, 23, 24a,b, 25, 26, 29, 30a,b, 43, 44
3	1-4, 7, 8, 11, 12, 17, 19-24, 27, 28, 32a-e
4	Functional Groups: 35a,b,e,g, 36, 37, 38
	<u>Test 2</u>
4	Radicals and Radical Halogenation: 16, 18 (prop. only), 19, 20, 22
7	Stereo: 1, 2, 3c,d, 4, 5, 9, 10, 13, 15, 22, 23, 24, 26, 27, 32-34, 38a,c-f,h-k
8	Substitution: 1-3, 5, 7, 9-11, 15b, 16, 18, 20, 22a-g, 23, 24, 25a-f, 30, 31, 32a,b,d-h, 33a, 34, 40, 47, 49-51
5	Elimination: 22-24, 36, 37a,b,e, 40c,d,g,h,i,j
	<u>Test 3</u>
5	1, 2, 4, 11-17, 19, 22-24, 28a-h, 30, 33a-d (rank), 34a,b, 36, 37, 40
6	1-5, 8, 9, 15, 19, 21, 26a-h, 27, 28, 32, 34, 36a-f,I,k, 37b-d, 42, 58-61, 63, 65-69 Ch 15:5
	<u>Test 4</u>
10	1, 2, 4, 7, 8, 9, 10, 13, 14, 16, 17, 18, 19, 25a, 28a-f, 29, 30, 32, 33, 35, 36a-c, 37, 41, 42, 47, 48, 49, 50
11	1, 2, 3a,c, 13, 15, 18, 21, 24, 25, 26, 33f,I, 34, 36a, 39a-d, h, i, 43a, b, e, f, 44, 45, 46, 47, 50, 51, 59, 60, 61, 63
12	2, 3, 4, 6, 10, 12, 15, 17, 18, 19, 21, 22, 23, 24, 34a-k, 35a-f, 36a,c,d,f, 37, 38, 39a-l,n, 44, 45a-d,g,I,l,m, 46a,c-e, 47a,b,d, 50, 52 Ch 11: 10, 11

**Sapling OnLine Homework, version 2013. Sapling Learning - Organic Chemistry Question Sets.** Sapling's chemistry questions are delivered in a web browser to provide real-time grading, response-specific coaching, improvement of problem-solving skills, and detailed answer explanations. Dynamic answer modules enable one to interact with 3D models and figures, utilize drag-and-drop synthetic routes, and draw chemical structures - including stereochemistry and curved arrows. Altogether, Sapling is cheaper than a tutor, provides more value than a solutions manual, and goes beyond a mere assessment exercise to give a learning experience.

### **Enrolling at the beginning**

Option 1: Buy a Sapling "license" at the NDSU bookstore. It will have a code and detailed instructions for logging on.

Option 2: Buy it online.

1. Go to <http://saplinglearning.com>

2a. If you already have a Sapling Learning account, log in and skip to step 3.

2b. If you have Facebook account, you can use it to quickly create a SaplingLearning account. Click the blue button with the Facebook symbol on it (just to the left of the username field). The form will auto-fill with information from your Facebook account (you may need to log into Facebook in the popup window first). Choose a password and timezone, accept the site policy agreement, and click "Create my new account". You can then skip to step 3.

2c. Otherwise, click "create account". Supply the requested information and click "Create my new account". Check your email (and spam filter) for a message from Sapling Learning and click on the link provided in that email.

3. Find your course in the list (you may need to expand the subject and term categories) and click the link.

4. Select a payment option and follow the remaining instructions. **NOTE: Sapling costs \$29.99 for a single semester online. There is a 14 day grace period to access your courses before payment, and there is a 60 day refund policy. For more information on refunds, visit:**

<http://www.saplinglearning.com/help/?topic=9>

5. Work on the Sapling Learning training materials. The activities, videos, and information pages will familiarize you with the Sapling Learning user environment and serve as tutorials for efficiently drawing molecules, stereochemistry, etc. within the Sapling Learning answer modules. These training materials are already accessible in your Sapling Learning course.

Once you have registered and enrolled, you can log in at any time to complete or review your homework assignments. During sign up - and throughout the term - if you have any technical problems or grading issues, send an email to [support@saplinglearning.com](mailto:support@saplinglearning.com) explaining the issue. The Sapling support team is almost always more able (and faster) to resolve issues than your instructor.

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### **Getting on when you've already enrolled:**

1. Website: <http://www.saplinglearning.com/> (This is also linked from Jasperse website).

2. If you click on "Activites and Due Dates" in the upper left corner, that will list assignments.

3. Miscellaneous:

- You can try a problem as many times as you like. But the scoring will cost you 5% of the points available (per problem) for each incorrect attempt.
- **Jasperse can enter due-date extensions.**
- Take some time with the introduction materials, including the "training assignment" and the "drawing tips and shortcuts" practice problems.
- You can go back and work on things after they are due. So you can use these as a study tool later on if you wish (or when you're studying for PCAT or whatever....)

### **Re-enrolling for Organic II, if you Paid a 2-semester package fee for Organic I**

To register for the course for those who purchased the two semester access, find the course. From there, if you paid the 2-semester access, there should be a button that says "Use your Sapling Learning Credit to enter the course" (provided you haven't used the credit on any other courses). Click the button and you should have access.