

ORGANIC CHEMISTRY II: CHEMISTRY 360 SYLLABUS
SPRING 2023 Course ID=000980, CHEM360-01

Classroom: Hagen 325 Dr. Craig P. Jasperse web: http://web.mnstate.edu/jasperse/Chem360/Chem360.html Office: Hagen 407J Telephone: 218-477-2230 e-mail: mailto:jasperse@mnstate.edu Zoom-Room: https://minnstate.zoom.us/j/8827046226	Office Hours: M-W-F 9-10:30; M-T-W-H-F 1-2:30 But much afternoon time is available, too
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Required Text and Materials:

- 1) Text: "Organic Chemistry", 8th edition OR 7th edition OR 6th edition, by Wade (Note: if you have a different Wade edition, or a version of Carey's Organic Chemistry as used at NDSU, contact me in order to use what you have.)
 Note: These aren't the newest versions, so you can buy used ones cheap on-line. See website for Amazon links to cheap copies: <http://web.mnstate.edu/jasperse/Required%20Text%20and%20Materials.pdf>
- 2) Solutions Manual: "Solutions Manual, Organic Chemistry." Get the edition that matches the textbook edition you buy. (In other words, if you have 8th edition test, make sure you get the 8th edition solution manual, etc.)
- 3) Online "Achieve" homework. <https://achieve.macmillanlearning.com/start>

Test Schedule

Test #1 (100 pts) Wednesday, Feb. 8	Ch. 10 Structure and Synthesis of Alcohols Ch. 11 Reactions of Alcohols
Test #2* (50 pts) Wednesday, Feb. 22	Ch. 13 Nuclear Magnetic Resonance Spectroscopy Ch. 12 Infrared Spectroscopy
Test #3 (100 pts) Monday, April 3	Ch. 18 Ketones and Aldehydes Ch. 22 Alpha Substitutions and Condensations of Enols and Enolate Ions
Test #4 (100 pts) Monday, May 1	Ch. 19 Amines Ch. 20 Carboxylic Acids Ch. 21 Carboxylic Acid Derivatives
Final Exam (150 pts) Monday, May 8, 11:30	Comprehensive Final Exam

Grading Summary:

		<u>Tentative letter grades</u>
Tests	350 points	A/A- ≥90%
Final exam	150 points	B-/B/B+ ≥80%
Sapling online homework	80 points	C-/C/C+ ≥70%
Take-Home Quizzes	20 points	D-/D/D+ ≥56%

(+5 points extra credit possible for perfect attendance)

Note: The instructor may lower but will not raise the numbers required for a letter grade.

Attendance: Perfect attendance will be rewarded with 5 points of extra credit. Be sure to sign the attendance sheet each day!

Final Exam: The final exam will be cumulative, covering the Organic II semester.

Jasperse website: <http://web.mnstate.edu/jasperse/Chem360/Chem360.html> This will provide links to:

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

Book Homework Problems: All assigned book problems are representative of what I consider to be reasonable test-level problems, and have worked-out answers in the Solutions Manual. With solutions manuals available, I will not collect the book homework. After each class, review your notes and try to work all of the assigned book problems for the sections covered. Do all of the assigned end-of-chapter problems as soon as a chapter is completed in class.

On-line “Achieve” 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. These also provide some “easy points”, Achieve is partially intended as a “grade lifting” component.

Recorded Lectures and On-Line Availability: Video version of comparable lectures covering comparable material from last year are available. I will try to record and post new videos of this year’s lectures as well. Videos in which I talk through each practice set and practice test problem are also available.

Recorded on-line lectures will be used on Snow Days/Flood Days

Final Exam and Grading

The final exam will be cumulative for this semester. Problems will be similar in style to what you’ve seen throughout the semester. The final exam will be worth 150 points.

Class E-Mail List

An email list will be used to notify you of special scheduling information or other miscellany. (If I am sick and won’t be able to hold class; if there are errors in one of the practice tests or book problems or in something I communicated in class, etc.) The list defaults to your official mnstate e-mail address. If that isn’t what you actually use, contact me.

Course Description

CHEM 360 Survey of Organic Chemistry: Part II (3 credits)

The structure, nomenclature, reactions, reaction mechanisms, and synthesis of carbon compounds that contain oxygen and nitrogen. **Prerequisite:** Chem 350

Note: Organic Chemistry Laboratory II, Chem 365, is a related but separate class. It is not required, but if you want to be in the lab you must be registered for it.

Student Learning Outcomes/Course Objectives

The general outcome goals are that students will understand the structure, characterization, nomenclature, reactions, reaction mechanisms, and synthesis of carbon compounds including those that contain oxygen and/or nitrogen. A general summary of major learning topics is summarized on page 1, with the listing of chapters that will be covered. A more detailed list of learning topics is summarized on page 4, with an approximately day-by-day listing of topic coverage. Most of the learning outcomes will be assessed by problems in which students must demonstrate their understanding. The list of problems on page 3 represents a detailed and representative sampling of the types of problems that should be solvable by a student who has achieved all the learning outcomes.

Academic Honesty

Cheating will not be tolerated and will be reported to the Dean of your College and the Vice President for Academic Affairs. It may also be reported to the Student Conduct Committee for further disciplinary action. For a full description of the MSUM Academic Honesty Policy, please see the Student Handbook. (<http://www.mnstate.edu/sthandbook/POLICY/index.htm>)

ACHIEVE/SAPLING OnLine Homework, version 2023

- ACHIEVE/Sapling should be ready at least by November 15, and can be sooner by arrangement.

Getting on when you've already enrolled: (see lower down for enrolling at first)

1. Website: <https://achieve.macmillanlearning.com/>
2. Sign in
3. Have "VIEWING BY" set as "Assignments"
4. Miscellaneous:
 - You can try a problem as many times as you like. But the scoring will cost you only 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 do not need to complete a chapter assignment at a single time. You can do as much as you like; leave; and return as you like.
 - ACHIEVE scores will not appear in your D2L grade records until after you've completed all of the assigned ACHIEVE work.
 - For course points, your ACHIEVE points will equal ACHIEVE % x 73.
 - So, for example, 100% x 80 = 80/80; 90% x 80 = 72/80, etc..

How to enroll into the ACHIEVE/Sapling online homework problems required for this course:

Short Synopsis:

1. Go to: <https://achieve.macmillanlearning.com/>
2. Click on "**I Need to Enroll in a Course**"
3. Enter your course ID as given to you by your instructor (see website, syllabus, email, or request)
 - a. Course ID for Spring 2023: jay75a
4. You then have two options:
 - a. Purchase Access Online: Select the access period you want to buy. Add it to your cart. Create an account. Follow the check-out process.
 - b. Already have a code: Simply enter in the code you have either purchased or received. Create an account and you're in.

Longer with More Step-by-Step Details:

1. Go to: <https://achieve.macmillanlearning.com/>
2. Click on "**I Need to Enroll in a Course**" (in the lower left quadrant)
3. **Enter the Course ID** (this is specific/unique to each course).
 - a. Course ID for Spring 2023: jay75a
4. Click "**Purchase Achieve Access**" button
 - This is the most direct, cheapest payment and the way to go.
 - The "enter access code" would apply if you purchased access from the bookstore. Hopefully the bookstore will have access code cards, but I'm not totally sure?
5. **Add it to your cart.**
 - If first time using "Achieve", you may need to fill in account information, with email and password and stuff at this point? Or maybe that will happen later....
 - Note: *IF* it's Organic I you are adding, there will be an option to buy two-semester's worth of access at a reduced cost.
 - If it's O2 you are adding and you'd previously paid for 2-semester's access, you'll get a prompt that you can use that previous payment.
6. **Checkout.**
7. **Create Account** or Sign In
8. Achieve Technical Support:
 - <https://macmillan.force.com/macmillanlearning/s/chat-with-us>

Course Summary:

- See: <http://web.mnstate.edu/jasperse/Online/Chem360-CourseSummary.pdf>

Course and Test Learning Objectives:

- See <http://web.mnstate.edu/jasperse/Online/Objectives%20Organic%20Chemistry%20360.pdf>

Use of Other Textbooks:

- See: <http://web.mnstate.edu/jasperse/Chem360/OtherBooks/OtherTexbooks.htm>

Jasperse Normal Schedule:

- See: <http://web.mnstate.edu/jasperse/Online/NormalSchedule.pdf>
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ACCESSIBILITY:

Minnesota State University Moorhead is committed to providing equitable access to learning opportunities for all students and strives to make courses inclusive and accessible in accordance with sections 504 and 508 of the 1973 Rehabilitation Act and the Americans with Disabilities Act. The University will make reasonable accommodations for students with documented disabilities. Accessibility Resources (AR) is the campus office that collaborates with students in need of accommodations and assists in arranging reasonable accommodations.

If you have, or think you may have, a disability, please contact Accessibility Resources at (218) 477-4318 (V), (800) 627.3529 (MRS/TTY), or stop by to schedule an appointment with the Director of Accessibility Resources in 154C Flora Frick Hall. Please also contact Accessibility Resources if you are currently registered for accommodations and have any questions or concerns. Additional information is available on the AR website: <http://www.mnstate.edu/accessibility>. The ADA Coordinator for students and ADA compliance issues is Kara Gravley-Stack, Dean of Students; (218) 477-2391, kara.gravleystack@mnstate.edu, or 153 Flora Frick Hall.

MSUM Sexual Violence Policy: Acts of sexual violence are intolerable. MSUM expects all members of the campus community to act in a manner that does not infringe on the rights of others. We are committed to eliminating all acts of sexual violence.

MSUM faculty and staff are concerned about the well-being and development of our students. We are obligated to share information with the MSUM Title IX Coordinator in certain situations to help ensure that the students' safety and welfare is being addressed, consistent with the requirements of the law. These disclosures include but are not limited to reports of sexual assault, relationship violence, and stalking.

If you have experienced or know someone who has experienced sexual violence, services and resources are available. You may also choose to file a report. For further information, contact Lynn Peterson, Coordinator of Sexual Assault Services at Hendrix Clinic and Counseling Center, 218-477-2211, or Ashley Atteberry, Title IX Coordinator in Owens Hall 208 (218-477-2174; ashley.atteberry@mnstate.edu). Additional information is available at: www.mnstate.edu/titleix

ORGANIC CHEMISTRY II PROBLEMS, USING WADE 8

Amazon link, for Used Textbooks and Solutions Manuals (Cheap)

- Organic Chemistry (8th Edition) by L. G. Wade Jr

https://www.amazon.com/s/ref=nb_sb_ss_i_3_18?url=search-alias%3Dstripbooks&field-keywords=wade+organic+chemistry+8th+edition&sprefix=Wade+Organic+Chem%2Cstripbooks%2C167&crd=EORRPH7VPDSN

- If you are using a different textbook, for example Wade 7th or 6th edition, or Carey 10th or 9th of 8th edition, see the following links to see which problems are appropriate from those books. If you don't have one of the books on this list, then I don't have a list of problems from your book that are appropriate.

<http://web.mnstate.edu/jasperse/Chem360/Other%20Books-Problems%20and%20Readings%20342/Other%20Books-Problems%20and%20Readings.htm>

<u>Chapter Topic</u>	<u>Wade Chap</u>	<u>Wade 8 Problems In the Chapter</u>	<u>Wade 8 Problems Back of the Chapter</u>
Structure and Synthesis of Alcohols	10	1, 5d, 6, 8, 10, 12a,b,d, 13-16, 17 (esters only), 18-20, 22-26	31, 33a-d, 34b,c, 35a,c, 36b,c, 37 (review from chapter 8), 38a-l, 39, 40, 42, 43
Reactions of Alcohols	11	1a,b,d, 2, 3, 4.1,2, 5a,b, 6, 9, 10, 11, 12a, 13, 14, 22, 23, 26a, 33, 34, 35, 36, 37, 38	40 (do the bromides only), 41 (skip g), 42, 43, 44, 48a, b, c, f, g, h, 49, 50, 52, 53, 56
Nuclear Magnetic Resonance Spectroscopy	13	2, 3, 4, 5, 6, 7, 9, 11, 13a, 15, 16, 18, 22, 24a-e, 25, 27, 29, 30, 32	33, 34, 35 (skip d), 36, 38, 39, 40, 41, 43, 44, 49
Infrared Spectroscopy	12	4, 5	16
Ketones and Aldehydes	18	1a,b, 6, 7, 8, 9, 11, 17a, 18, 20a, 21, 23, 24, 25, 26a,b,d, 27, 28, 29, 30, 31, 32, 33a-d, 34a-c, 36a	38a-c, e-g, l, 39a,e, 40, 41, 43, 44, 47a,c,d, 49, 50a,b,d,e, 51a-f,h, 52, 53a-g, i-l, 54a-e, 55a,c,d,e,f 57, 58, 59, 64a-d, 65
Alpha Substitutions and Condensations of Enols and Enolate	22	(Enols, Halogenation) 1, 2, 3, 5, 10, 11, 12, 13, 14, (Aldol) 18, 19, 22, 23, 24, 25, 26, 27, 28, 29, 30,32, (Claisen) 34a, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, (alkylation-decarboxylation) 46, 47, 49, 50, Ch 18.15, 16 (Wittig)	60, 61, 62, 63, 64, 65, 66 (Basically draw the dicarbonyl precursor), 67, 68 (skip c,g), 69a, d, e, 70, 71, 73a-c
Amines	19	1,2(skip b,d), 3a-c, 5b,c, 6a-c, 15, 16, 17, 26, 27, 28, 30a-c, e-g, 31	32a-e, 33, 35a,c,d 36a, h,i, j,l,m (NaBH(OAc) ₃ = NaBH ₃ CN), p, q, 37f, 39a,d,g, 42
Carboxylic Acids	20	1b-d,g, 2a-c, 3, 4, 5, 6, 11 b,c,d,f, 12, 13, 15b,c, 16a,b, 18, 19, 20, 21, 23, 24	25 (not d,g, i), 26a,b,c,f,g, (IUPAC only), 27a,e,f,h,I, 28, 29 (skip b), 30a,d,e, 31, 32a,c,d, 33, 35a-e,i,j,k, 36a-c,e,f, 37, 38, 39, 41, 42, 44, 47
Carboxylic Acid Derivatives	21	1a-c, 6-14,16, 18, 31, 32a,b	42a-c, 43a,c,d,e,f, 44, 45a,e,f, 46, 47 (saponification is NaOH/H ₂ O hydrolysis), 48a,b, 49a,b,d, e, 50a,b,c,e,f,g,h, j, l, 54a,c,d,f,j, 55, 57a-c

Chemistry 360, Jasperse, Spring 2023 Wade 8 (43 class days, 39 lectures)			Reading Assignment
Date	Topic		
1	9-Jan	Intro; Structure, Nomenclature, Properties, Weak Acidity of Alcohols	10.1-10.6
2	11-Jan	Synthesis of Alcohols; Organometallic Reactions.	10.7-10.9
3	13-Jan	Synthesis of Alcohols; Organometallic Reactions.	10.7-10.9
		Skip 10.12	
	16-Jan	No Class. Martin Luther King Day.	no class
4	18-Jan	Side Reactions; Reduction of Carbonyl Compounds	10.10-10.11
5	20-Jan	Oxidation of Alcohols	11.1-11.3
		Skip 11.4, 11.11-13	
6	23-Jan	Conversion of Alcohols to Tosylates or Halides; Uses of Tosylates and Halides	11.5-11.9
7	25-Jan	Miscellaneous; Chemical Tests; Multistep Synthesis	11.10, 11.14
8	27-Jan	Retrosynthetic Analysis	
9	30-Jan	Catchup, Multistep Synthesis Problems	Catchup
10	1-Feb	Review for Test 1	---
11	3-Feb	¹ H NMR Overview: Chemical Shift, Integration, and Splitting; ¹ H NMR Problem Solving	13.5-8
12	6-Feb	¹ H NMR Overview: Chemical Shift, Integration, and Splitting; ¹ H NMR Problem Solving	13.5-8
T1	8-Feb	Test #1 Covering Chapters 10-11.	Test 1
13	10-Feb	¹ H NMR Problem Solving	13.5-8
14	13-Feb	More Problem Solving; Complex Splitting; Stereochemical Nonequivalence of Protons	13.9-10
15	15-Feb	¹³ C NMR; Infrared Spectroscopy	13.12-13; 12.11-12
16	17-Feb	Spectroscopy Catchup, Integrated Problems (Focus on 13.5-8, 12-13; Skim 13.1-4, 9, 10; Skip 11, 14)	catchup
17	20-Feb	Ketones/Aldehydes. Nomenclature, Properties, Intro.	18.1-7
T1	22-Feb	Test #2 Covering Chapters 12-13. 50 points.	Test 2
18	24-Feb	Synthesis of Ketones/Aldehydes.	18.7-11
19	27-Feb	Reactions of Ketones/Aldehydes	18.12, 14-17, 18-19
20	1-Mar	Carbonyls, Carbohydrates, and Condensation Polymers	18.20-21
21	3-Mar	Catchup; Enols and Enolates Intro. Acid/Base Considerations; Proton as Electrophile (Skip 18.13, for now....)	22.1-2, 22.15
22	6-Mar	Enols and Enolates Intro. Acid/Base Considerations; Proton as Electrophile	22.1-2, 22.15
23	8-Mar	Halogenation; Alkylation; Double Activation; Ester Hydrolysis; Decarboxylation	22.3, 5, 15-17
24	10-Mar	The Aldol Reaction (Aldehyde/Ketone as Electrophile) (Skip 22.4,6, 18, 19)	22.7-11
	13-Mar	No Class, Spring Break	
	15-Mar	No Class, Spring Break	
	17-Mar	No Class, Spring Break	
25	20-Mar	Claisen Reaction (Ester as Electrophile)	22.12-17
26	22-Mar	Catchup	
27	24-Mar	The Wittig Reaction and Alkene Synthesis; Catchup	18.13
28	27-Mar	Catchup, Integrated Practice Problems.	Catchup
29	29-Mar	Amines. Intro, Nomenclature, Properties; Basicity of Amines; Structural Factors; Salts	19.1-7
30	31-Mar	Reactions of Amines	19.10-13, 17-18
T3	3-Apr	Test #3 Covering Chapters 18 and 22.	
31	5-Apr	Reactions of Amines. Proteins: Condensation Polymers of Amino Acids.	19.17-19
32	7-Apr	No Class, Easter Friday	
33	10-Apr	No Class, Easter Monday	
34	12-Apr	More Synthesis of Amines	19.19
	14-Apr	Carboxylic Acids: Nomenclature; Properties; *ACIDITY*; Salts; Soap; SYNTHESIS (Skip 19.8-9,14-16,24-25)	20.1-5
	17-Apr	Acid Synthesis; Reactions	20.8-11
35	19-Apr	Reactions of Acids: Nucleophilic Acyl Substitution; Carboxylic Acid Derivatives	20.13-15; 21.1-3
36	21-Apr	Interconversions Among Acids and Derivatives; Synthesis and Mechanism; Catchup (Skip 20.6,7,12; Skip 21.4))	21.5-7
37	24-Apr	Interconversions Among Acids and Derivatives; Synthesis and Mechanism; Catchup	21.5-7
38	26-Apr	Practice Problems	Practice
39	28-Apr	Polymers Chemistry. Addition, Condensation, and Biopolymers.	26.1-4, 24.8-10, 23.13
T4	1-May	Test #4 Chapters 19-21	Test 4
	8-May	Final Exam, 11:30am., Monday	Final Exam