ORGANIC CHEMISTRY II: CHEMISTRY 360 SYLLABUS
SPRING 2025 Course ID=001173, CHEM360

Classroom: Langseth 118 Dr. Craig P. Jasperse web: http://web.mnstate.edu/jasperse/Chem360/Chem360.html Office: Hagen 407J Telephone: 218-477-2230 Cell: 218.790.9560 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

Required Text and Materials:

1) Required online "ACHIEVE/SAPLING" homework. https://achieve.macmillanlearning.com/, 2025 Course ID = qdeprg

2) Recommended Text: "Organic Chemistry", Wade+Simek", 9th edition, Pearson. 8th or 7th edition of Wade is fine; or a version of Klein's Organic Chemistry as used at NDSU; or certain other texts, contact me to maybe use what you have..)

- Note: For more details and purchase links, see: http://web.mnstate.edu/jasperse/Required-Text-and-Materials.pdf
- Problem listing from other textbooks: https://web.mnstate.edu/jasperse/Chem350/Other-Textbooks.html

3) Solutions Manual: Get a solutions manual that matches the textbook edition you get.

Test Schedule

Test #1 (100 pts) Monday, Feb. 10	Ch. 10 Structure and Synthesis of Alcohols Ch. 11 Reactions of Alcohols
Test #2* (**50** pts) Friday, Feb. 28	Ch. 13 Nuclear Magnetic Resonance Spectroscopy Ch. 12 Infrared Spectroscopy
Test #3 (100 pts) Wednesday, April 9	Ch. 18 Ketones and Aldehydes Ch. 22 Alpha Substitutions and Condensations of Enols and Enolate Ic
Test #4 (100 pts) Monday, May 5	Ch. 19 Amines Ch. 20 Carboxylic Acids Ch. 21 Carboxylic Acid Derivatives
Final Exam (150 pts) Tuesday, May 13, 11:30	Comprehensive Final Exam

Grading Summary:

		Tentative letter grades	
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://wwwmnstate.edu/sthandbook/POLICY/index.htm)

ACHIEVE/SAPLING OnLine Homework, version 2025

- 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 2025: qdeprg
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 2025: qdeprg
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-semesters worth of access at a reduced cost.
   - If it's O2 you are adding and you'd previously paid for 2-semesters 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 9

Based on Organic Chemistry (9th Edition) by L. G. Wade Jr

Note: if you have the 8th, 7th or 6th edition of Wade, or if you have a Klein textbook as used at NDSU, lists of problems are linked from the following website, or you can email me (jasperse@mnstate.edu) to get the list.) Contact me if that's your situation, or see the following link:

- https://web.mnstate.edu/jasperse/Chem360/OtherTexbooks.htm

Note: for some links to buy variably new or perhaps older edition of the textbook and the associated solutions manuals, see: https://web.mnstate.edu/jasperse/Required-Text-and-Materials.pdf

Chapter Topic	Wade Chap	Wade 9 Problems In the Chapter	Wade 9 Problems Back of the Chapter
Structure and Synthesis of Alcohols	**10**	1, 5d, 6, 8, 10, 12a,b,d, 13-16, 17 (esters only), 18-20, 22-26	30, 32a-d, 33b,c, 34a,c, 33b,c, 36a-l, 38 (review from alkenes), 39, 40, 42, 43, 56, 57 (skip d)
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	39 (skip g), 41 (do the bromides only), 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, 8, 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, 13a, 14, 16a, 17, 19, 20, 21, 22a,b,d, 23, 24, 25, 26, 27, 28, 29a-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, 67a,b
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 18.32, 33 (Wittig)	60, 61, 62, 63, 64, 65, 67 (Basically draw the dicarbonyl precursor), 68, 69 (skip b,e,i), 71a, d, e, 72, 73, 77a-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, 34, 37a,c,d 38a, h,i, j,l,m ($NaBH(OAc)_3$ = NaBH3CN), p, q, 40f, 42a,d,g, 47
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/H2O 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 2025 Wade 9 (43 class days, 39 lectures)		Reading
	Date	Topic		Assignment
1	13-Jan	Intro; Structure, Nomenclature, Properties, Weak Acidity of Alcohols		10.1-10.6
2	15-Jan	Synthesis of Alcohols; Organometallic Reactions.		10.7-10.9
3	17-Jan	Synthesis of Alcohols; Organometallic Reactions.		10.7-10.9
		Skip 10.12		
	20-Jan	No Class. Martin Luther King Day.		no class
4	22-Jan	Side Reactions; Reduction of Carbonyl Compounds		10.10-10.11
5	24-Jan	Oxidation of Alcohols		11.1-11.3
		Skip 11.4, 11.11-13		
6	27-Jan	Conversion of Alcohols to Tosylates or Halides; Uses of Tosylates and Halides		11.5-11.9
7	29-Jan	Miscellaneous; Chemical Tests; Multistep Synthesis		11.10, 11.14
8	31-Jan	Retrosynthetic Analysis		
9	3-Feb	Catchup, Multistep Synthesis Problems		Catchup
10	5-Feb	Review for Test 1		---
11	7-Feb	1H NMR Overview: Chemical Shift, Integration, and Splitting; 1H NMR Problem Solving		13.5-8
		*Note: some lectures for a later test come before an earlier test has been completed.		
T1	10-Feb	**Test #1 Covering Chapters 10-11.**		**Test 1**
12	12-Feb	1H NMR Overview: Chemical Shift, Integration, and Splitting; 1H NMR Problem Solving		13.5-8
13	14-Feb	1H NMR Problem Solving		13.5-8
14	17-Feb	No classes (Non-Instructional Day)		
15	19-Feb	More Problem Solving; Complex Splitting; Stereochemical Nonequivalence of Protons		13.9-10
16	21-Feb	13C NMR; Infrared Spectroscopy		13.12-14
		(Focus on 13.5-8, 12-13; Skim 13.1-4, 9, 10; Skip 11, 14)		
	24-Feb	Spectroscopy Catchup, Integrated Problems		catchup
17	26-Feb	Ketones/Aldehydes. Nomenclature, Properties, Intro.		18.1-7
T1	28-Feb	**Test #2 Covering Chapters 12-13. 50 points.**		Test 2
18	3-Mar	Synthesis of Ketones/Aldehydes.		18.7-11
19	5-Mar	Reactions of Ketones/Aldehydes		18.12-17
20	7-Mar	Carbonyls, Carbohydrates, and Condensation Polymers		18.19-20
		(Skip 18.13, for now….)		
	10-Mar	No Class, Spring Break		
	12-Mar	No Class, Spring Break		
	14-Mar	No Class, Spring Break		
21	17-Mar	Catchup; Enols and Enolates Intro. Acid/Base Considerations; Proton as Electrophile		22.1-2, 22.15
22	19-Mar	Enols and Enolates Intro. Acid/Base Considerations; Proton as Electrophile		22.1-2, 22.15
23	21-Mar	Halogenation; Alkylation; Double Activation; Ester Hydrolysis; Decarboxylation		22.3, 5, 15-17
		(Skip 22.4,6. 18, 19)		
24	24-Mar	The Aldol Reaction (Aldehyde/Ketone as Electrophile)		22.7-11
25	26-Mar	Claisen Reaction (Ester as Electrophile)		22.12-17
26	28-Mar	Catchup		
27	31-Mar	The Wittig Reaction and Alkene Synthesis; Catchup		18.18
28	2-Apr	Catchup, Integrated Practice Problems.		Catchup
29	4-Apr	Reactions of Amines		19.1-7
30	7-Apr	Amines. Intro, Nomenclature, Properties; Basicity of Amines; Structural Factors; Salts		19.9-12, 16-17
T3	9-Apr	**Test #3 Covering Chapters 18 and 22.**		
31	11-Apr	Reactions of Amines. Proteins: Condensation Polymers of Amino Acids.		19.16-18
32	14-Apr	More Synthesis of Amines		19.18
33	16-Apr	Carboxylic Acids: Nomenclature; Properties; *ACIDITY*; Salts; Soap; SYNTHESIS		20.1-5
	18-Apr	No classes (Non-Instructional Day, Easter weekend)		
		(Skip 19.8-9,14-16,24-25)		
34	21-Apr	Acid Synthesis; Reactions		20.8-11
35	23-Apr	Reactions of Acids: Nucleophilic Acyl Substitution; Carboxylic Acid Derivatives		20.13-15; 21.1-3
36	25-Apr	Interconversions Among Acids and Derivatives; Synthesis and Mechanism; Catchup		21.5-7
		(Skip 20.6,7,12; Skip 21.4))		
37	28-Apr	Interconversions Among Acids and Derivatives; Synthesis and Mechanism; Catchup		21.5-7
38	30-Apr	Practice Problems		Practice
39	2-May	Practice Problems, Catchup. Polymers Chemistry. Addition, Condensation, Biopolymers.		26.1-4, 24.8-10, 23.13
T4	**5-May**	**Test #4 Chapters 19-21**		Test 4
	13-May	**Final Exam, 11:30am., Tuesday**		**Final Exam**