

## CHEMISTRY 355 SYLLABUS FALL 2024

Dr. Craig P. Jasperse  
Office: Hagen 407J Research Lab: Langseth324  
Telephone: 477-2230  
e-mail: jasperse@mnstate.edu

web: <http://www.mnstate.edu/jasperse/>  
Office Hours: M 1-3; T 9-11:30;  
W 9-10:30; 1-3; F 9-10:30, 1-3, available most  
non-Thursday afternoons as well

Required Text and Materials:

Classroom: Langseth307 (lab)

- 1) Safety Goggles
- 2) Lab Manual (print from website, see <http://www.mnstate.edu/jasperse/Chem355/Chem355.html>)

Lab Schedule: Langseth307	Thursday 9:00-11:50	Thursday 1:30-4:20
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<u>Page</u>		<u>Date</u>
4	Checkin, Melting Points	Aug 29
10	Solubility Tests; Crystallization of Phthalic Acid	Sept 5
18	Molecular Structure	Sept 12
24	Recrystallization of Acetanilide Using Mixed Solvent; Recrystallization of an Unknown	Sept 19
30	Separatory Funnel and Rotary Evaporation: Liquid/liquid Extraction; Extraction of Acids and Bases	Sept 26
36	Gas Chromatography-Mass Spectrometry (GC-MS)	Oct 3
46	Nucleophilic Substitution of Alkyl Halides; Mechanistic Arrow Pushing	Oct 10
52	Chromatography; TLC, Column, and Flash Chromatography	Oct 17
64	Simple and Fractional Distillation of an Ethanol-Water Mixture; Distillation of an Unknown Mixture	Oct 24
70	<sup>13</sup> C Nuclear Magnetic Resonance ( <sup>13</sup> C NMR) Spectroscopy	Oct 31
82	<sup>1</sup> H Nuclear Magnetic Resonance ( <sup>1</sup> H NMR) Spectroscopy	Nov 7
	Makeup Lab. For making up previously-cancelled lab days or labs that individual students missed	Nov 14
94	Diels-Alder Reaction	Nov 21
	Thanksgiving Break, no lab this week	<b>Nov 28</b>
100	Aromatic Substitution: Nitration of Methyl Benzoate Cleanup, Checkout	Dec 5
106	Summary of <sup>1</sup> H-NMR, <sup>13</sup> C-NMR Interpretation	
108	Standard Synthesis Laboratory Report Format	

**Grading Policy: Attendance:**

1. Laboratory attendance is important! In the event of an absence, you will receive zero points for that experiment. Attending a different session for a given week may be possible upon arrangement.
2. **Individual Lab Scores:** Most experiment will require completion of a lab report, perhaps answers to some questions, and often identification of unknowns. Some of the grade will be based on quality of results, for example successful identification of an unknown, or high yield, or high product purity. Unless notified otherwise lab reports should be completed by the following lab period.
3. **Write Your Own Lab Report.** While some experiments may be done with a partner, you should keep your own observations and write your report individually, unless told otherwise.
4. Instructor's **evaluation of your laboratory technique and understanding:** This will make up 20% of the total grade.

Tentatively letter grades will be assigned as follows:

A/A- (≥90%)	B-/B/B+ (≥80%)	C-/C/C+ (≥70%)	D-/D/D+ (≥60%)
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The instructor reserves the right to lower the requirement for a letter grade, but will not raise it.

**Keys-Cards and Door Access:** The doors will be locked all the time. You will always need your key-card (your MSUM ID card) in order to get in. The card will work **M-F, 7:30am-9:00pm, in rooms 305 and 307 (main lab and NMR room).**

**Safety Notes:** Noncompliance may result in dismissal from lab and a zero for the week!

1. Wear safety goggles in the organic laboratory.
2. Dispose of chemical wastes in appropriate containers.
3. The impact of the chemicals used in some of these experiments on unborn babies is not fully known. If you are pregnant or become so, I advise you to drop organic chemistry laboratory.

**Course Description**

CHEM 355 Organic Chemistry Laboratory I (1 credit)

Techniques for the purification, synthesis, and characterization of organic compounds and the study of organic reactions. **Prerequisite:** Chem 210L

**Student Learning Outcomes/Course Objectives**

Students should master the laboratory techniques required for the purification, characterization, identification, and synthesis of various organic compounds. The ability to identify unknowns, including via use of spectroscopy, is an important outcome goal.

**Academic Honesty**

For a full description of the MSUM Academic Honesty Policy, please see the Student Handbook. (<http://www.mnstate.edu/sthandbook/POLICY/index.htm>)

**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 special accommodations and assists in arranging reasonable accommodations. If you have, or think you may have, a disability (e.g. mental health, attentional, learning, chronic health, sensory or physical):

- Please contact AR at (218) 477-2167 or [accessibility@mnstate.edu](mailto:accessibility@mnstate.edu) to schedule an appointment.
- If you are already registered with AR and have a current Accommodation Letter, please schedule an appointment to discuss implementation of your accommodations.
- Additional information is available on the AR website: <http://www.mnstate.edu/accessibility>