# CHEMISTRY 355 SYLLABUS
## FALL 2021

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/W/F 9-10:30, 1:00-2:00  
Tues 8:30-11:30

### Required Text and Materials:
1. Safety Goggles
2. Lab Manual (print from website, see http://www.mnstate.edu/jasperse/Chem355/Chem355.html)

### Classroom:
- Langseth307 (lab)
- Hagen 325 (prelab)

### Lab Schedule:

<table>
<thead>
<tr>
<th>Lab Schedule:</th>
<th>Page</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Langseth307</td>
<td>Tuesday 12-2:50</td>
<td>Aug 24, 26</td>
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<tr>
<td>Prelab (occasionally):</td>
<td>Hagen 325</td>
<td>Aug 31, Sept 2</td>
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<tr>
<td></td>
<td>Sept 7, 9</td>
<td>Sept 14, 16</td>
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<td>Sept 21, 23</td>
<td>Sept 28, 30</td>
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<td>Sept 8, 30</td>
<td>Oct 5, 7</td>
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<td>Oct 12, 14</td>
<td>Oct 19, 21</td>
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<td>Oct 26, 28</td>
<td>Oct 30, 25</td>
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<td>Nov 2, 4</td>
<td>Nov 2, 4</td>
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<td>Nov 9, 11</td>
<td>Nov 9, 11</td>
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<td>Nov 16, 18</td>
<td>Nov 16, 18</td>
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<td>Nov 23, 25</td>
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<td>Nov 30, Dec 2</td>
<td>Nov 30, Dec 2</td>
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<td>Nov 30, Dec 2</td>
<td>Nov 30, Dec 2</td>
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</tbody>
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### Topics Covered:
- Checkin, Melting Points
- Solubility Tests; Crystallization of Phthalic Acid
- Molecular Structure
- Recrystallization of Acetanilide Using Mixed Solvent; Recrystallization of an Unknown
- Separatory Funnel and Rotary Evaporation: Liquid/liquid Extraction; Extraction of Acids and Bases
- Gas Chromatography-Mass Spectrometry (GC-MS)
- Nucleophilic Substitution of Alkyl Halides; Mechanistic Arrow Pushing
- Chromatography; TLC, Column, and Flash Chromatography
- Simple and Fractional Distillation of an Ethanol-Water Mixture; Distillation of an Unknown Mixture
- 13C Nuclear Magnetic Resonance (13C NMR) Spectroscopy
- 1H Nuclear Magnetic Resonance (1H NMR) Spectroscopy
- Makeup Lab. for making up previously-cancelled lab days or labs that individual students missed Tuesday preferred, but Thursday allowed even though it’s Veterans Day
- Diels-Alder Reaction - Veterans Day
- Thanksgiving Break, no lab this week
- Aromatic Substitution: Nitration of Methyl Benzoate Cleanup, Checkout
- Summary of 1H-NMR, C13-NMR Interpretation
- Standard Synthesis Laboratory Report Format
**Grading Policy:**

1. **Attendance:** 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 experiments 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:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A/A-</td>
<td>(≥90%)</td>
</tr>
<tr>
<td>B-/B/B+</td>
<td>(≥80%)</td>
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<tr>
<td>C-/C/C+</td>
<td>(≥70%)</td>
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<tr>
<td>D-/D/D+</td>
<td>(≥60%)</td>
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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://wwwmnstate.edu/sthandbook/POLICY/index.htm](http://wwwmnstate.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 Accessibility Resources at (218) 477-4318 (V) or (800) 627.3529 (MRS/TTY) for more information, or stop by the AR office inside the Academic Support Center in Flora Frick Hall.
- If you are already registered with Accessibility Resources and have questions or concerns regarding your current Accommodation Letter, please contact Kari Klettke, Director, at: kari.klettke@mnstate.edu or 218-477-5859.

Additional information is available on the AR website: [http://www.mnstate.edu/accessibility](http://www.mnstate.edu/accessibility)