Instructor: Prof. Wayne L. Gladfelter (wlg@umn.edu, 241B Smith Hall)  
Office Hours: Monday 1:30 - 2:30 PM, Wednesday 11 AM - noon; other hours by appointment

Classes: All classes will be held in 331 Smith Hall from 12:20 to 1:10 PM on MWF. This course is scheduled as an in-person course. I intend to hold all class sessions in-person except if situational factors arise, such as personal illness of the instructor, when the class may be held synchronously via Zoom or recorded for later viewing.

TA: Sallu Kargbo (kargb006@umn.edu, 591Kolthoff Hall)  
Office Hours for Sallu will be held in 348 Smith Hall from 3 to 4 PM on Tuesdays and Thursdays; other times by appointment


Models Recommended (not required): Duluth Labs MM-004 Chemistry Molecular Student Set (you may have this from your organic chemistry class). Models are particularly helpful for the section on symmetry and point groups.

Grading: The course grade will be determined by the combined performance of three midterm exams and the final exam with a small contribution from class attendance. Each of these will be weighted with the following percentages to determine the final grade:

- Class participation: 4%
- Midterm 1: 22%
- Midterm 2: 22%
- Midterm 3: 22%
- Final Exam: 30%

Class Participation: Students may earn up to 4% of their grade through class participation. This will be awarded through answering Canvas questions during class periods (You will need a smartphone or laptop computer during class). You must be in attendance to receive this credit. One point will be awarded per class period with a max of 30 points (out of 38 class periods that do not include exam days or the first day of class)

Extra Credit: Give a short (5-minute max) presentation to the instructor about an element of your choice. This will be worth up to 1 point. You may do this up to 3 times.

Examinations: The three midterm exams will be held on the dates listed below.

Exam Schedule
EXAM 1 Wednesday, September 28
EXAM 2 Wednesday, October 19
EXAM 3 Wednesday, November 16
FINAL EXAM Monday, December 17, 10:30 AM – 12:30 PM CST

**Grades:** The letter grade cutoffs, which will not be curved, for passing grades are listed below:

<table>
<thead>
<tr>
<th>total percentage</th>
<th>letter grade</th>
</tr>
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<tbody>
<tr>
<td>85</td>
<td>A</td>
</tr>
<tr>
<td>80</td>
<td>A-</td>
</tr>
<tr>
<td>75</td>
<td>B+</td>
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<td>70</td>
<td>B</td>
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<td>65</td>
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<td>60</td>
<td>C+</td>
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<tr>
<td>55</td>
<td>C</td>
</tr>
<tr>
<td>50</td>
<td>C-</td>
</tr>
</tbody>
</table>

**Missed exams:** A student can be excused from one midterm exam for an emergency, serious illness, or University sponsored activity. The student should contact the instructor as soon as circumstances allow, and appropriate documentation must be provided. If the circumstances are deemed as appropriate for missing the exam, the score on the final exam in the course will be used in place of the missed exam. If circumstances lead to a student missing more than one midterm exam, the student should immediately schedule a meeting with the instructor to discuss available options. In the case of University sponsored activities that require the student to be out of town, it may be possible to take the exam with the coach or another instructor as the proctor. Please see the instructor about such conflicts as soon as possible so arrangements can be made.

**Exam regrades:** A request for a re-grade must be made in writing to the instructor via email by the end of the week following the posting of the exam results.

**Web Access:** The course canvas site will be available through [https://canvas.umn.edu](https://canvas.umn.edu) using X500 accounts. The site will contain a class syllabus, notes, videos, grades, announcements and supplementary material.

**Ungraded Homework:** Questions from text will be identified as typical of the kind of questions that will appear on the exams. Although problem sets will not be collected or graded, you should strive to work as many of the problems as possible to help improve your understanding of course material. We will work many of the problems during class time.

**Scholastic Dishonesty:** The Board of Regents Student Conduct Code states that, “Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic
record; or fabricating or falsifying data, research procedures, or data analysis.” The policy in this course is zero tolerance. The action taken in a case of scholastic dishonesty in any exam in this course will be a grade of 0 for that exam.

**Incompletes:** Students that have an excused absence from the final exam AND are passing the course based on all the work completed prior to the final exam may be eligible to receive a grade of “I” in the course. If these criteria are met, contact the instructor as soon as circumstances allow you to discuss the possibility of an incomplete grade and the associated requirements for completion.

**COVID-19 Symptoms, Vaccination, Excused Absences, and Face Coverings:** You should stay at home if you experience any signs of illness or have a positive COVID-19 test result. If this occurs, please consult with your healthcare provider about an appropriate course of action. I will follow these same protocols and will let you know if the delivery of this course must be temporarily changed as the result of my own circumstances. Absences related to illness, including COVID-19 symptoms, for yourself or your dependents, are legitimate, excused absences.

**Vaccines:** COVID-19 Vaccinations (or approved exemptions) are required for all students and employees. Learn about vaccine and booster appointments on campus by visiting the FAQ on Get the Vax page.

**Face coverings:** Up-to-date policy information is available on the Safe Campus page. The University expects all community members to respect those who choose to wear a mask, as well as those who choose not to wear one. Indoor masking continues to be an important tool in high-risk situations. High-quality masks (N-95 or certified KN-95) will be available to students Fall 2022. Check the Safe Campus website for information on the location(s) for each campus.

**Student Mental Health and Stress Management:** As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. University of Minnesota services are available to assist you with addressing these and other concerns you may be experiencing. You can learn more about the broad range of confidential mental health services available on campus via [http://www.mentalhealth.umn.edu/](http://www.mentalhealth.umn.edu/).

**Department of Chemistry Diversity and Inclusion Committee:** Collaboration among people of all cultures and backgrounds enhances our experiences and contributes to excellence in teaching, learning, and research. We strive for a climate that celebrates our differences and strengthens our department by embracing and working to increase diversity, equity, and inclusion. For more information about our departmental efforts and upcoming activities: [https://sites.google.com/umn.edu/chemintranet/diversity-inclusion](https://sites.google.com/umn.edu/chemintranet/diversity-inclusion)

**Ally Statement:** I strive to serve as an effective Ally for all students. I am available to listen and support you in a safe and confidential manner. I can help connect you with resources to help
address barriers that may interfere with your academic and social success on campus as related to diversity, access, or safety. My goal is to help students be successful and to maintain a safe, accessible, and equitable campus.

**Equity, Diversity, Equal Opportunity, and Affirmative Action:** We welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability – and other visible and nonvisible differences to this course. Instructors, teaching assistants, and peer students are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class. This is in agreement with university policy: [http://regents.umn.edu/sites/regents.umn.edu/files/policies/Equity_Diversity_EO_AA.pdf](http://regents.umn.edu/sites/regents.umn.edu/files/policies/Equity_Diversity_EO_AA.pdf)

**Access and Disability Accommodations:** In this course, we support anyone requiring accommodations for access to class activities and materials. Please contact the instructor or the Disability Resource Center [https://disability.umn.edu/](https://disability.umn.edu/), which will provide a letter to share with the instructor on how to facilitate an inclusive learning environment.

**Sexual Harassment and related topics**
In this course, we strive to provide a safe and positive environment for everyone. Please review policy regarding sexual harassment and related topics: [https://policy.umn.edu/hr/sexharassassault](https://policy.umn.edu/hr/sexharassassault)
For support and help please contact the Aurora Center: [http://aurora.umn.edu](http://aurora.umn.edu)
**Information that you should memorize:**

1. Elements of the periodic table, including their names, symbol and position.
2. Bond length of a C-C single bond
3. Bond strength of a C-C single bond
4. Bond strength of a C-H bond
5. Conversion between kcal, kjoules, and eV
6. Shapes of the s-, p-, and d-orbitals
7. Coulomb's law

**Concepts from general and organic chemistry that you will need to use**

1. Thermodynamics: heats of formation, enthalpy, bond energies, free energy, entropy, chemical equilibrium
2. Kinetics: rate law, effect of temperature on rates, reaction coordinate diagrams
3. Reactions and mechanisms: unimolecular substitution (SN1), bimolecular substitution (SN2), oxidation-reduction reactions, nucleophiles, electrophiles
4. Structures of molecules: Lewis, oxidation state, bond order, resonance, localized bonding, delocalized bonding
5. Electronic structure of the atom: aufbau principle, Hund's rule, diamagnetic, paramagnetic