Department of Chemistry: E331 CB, 335-1350

Instructors: Dr. David Martin -- E433 CB, 319-467-1673, david-martin@uiowa.edu
Office Hours: Tu 3:00–4:00 pm, W 3:00–4:00 pm, or by appointment
Dr. Shuvendu Das -- Oakdale MTF B160, 319-467-4559, shuvendu-das@uiowa.edu
Office Hours: Th 4:00–5:00 pm, F 2:00–3:00 pm, or by appointment

Scheduled Lectures: Section A Friday 11:30-12:20, W128 CB
Section B: Wednesday 4:30–5:20, W128 CB

Laboratory Sections:
01 Monday and Wednesday, 9:30–12:20 pm, W468 CB
02 Tuesday and Thursday, 9:30–12:20 pm, W468 CB
03 Tuesday and Thursday, 9:30–12:20 pm, E464 CB
04 Monday and Wednesday, 1:30–4:20 pm, W468 CB
05 Monday and Wednesday, 1:30–4:20 pm, E464 CB
06 Tuesday and Thursday, 2:00–4:50 pm, W468 CB
07 Tuesday and Thursday, 2:00–4:50 pm, E464 CB
08 Monday and Wednesday, 5:30–8:20 pm, W468 CB
09 Monday and Wednesday, 5:30–8:20 pm, E464 CB
10 Tuesday and Thursday, 5:00–7:50 pm, W468 CB
11 Tuesday and Thursday, 5:00–7:50 pm, E464 CB

Course Goals
• become familiar with standard organic chemistry laboratory operations
• gain experience in conducting organic reactions
• learn and apply methods of separation and identification of organic compounds

Prerequisites: CHEM:1120 and CHEM:2210 (or CHEM:2230)
Co- or Prerequisite: CHEM:2220 (or CHEM:2240)

Course Materials
Course Website (ICON): icon.uiowa.edu -- For assistance go to icon.uiowa.edu/help/students/
Required Text: “Techniques and Experiments in Organic Chemistry: Biological Perspectives and Sustainability” -- Electronic (PDF file), download from ICON.
To avoid exposing devices to lab hazards, you may print the text and put it in a 3-ring binder.
Required Equipment: laboratory goggles, laboratory notebook (with duplicate carbonless pages),
internet access, access to scanner or smartphone for submitting assignments

Course Administration at the Chemistry Center
For inquiries about TA office hours, SDS-related scheduling, and other administrative details.
  Contact: chemistry-center@uiowa.edu, 335-1341, E225 CB.
  Hours: 8–12 noon & 1–5 pm on M–Th (close at 4:30 PM on Friday)
Changes in registration will operate via email. For instructions, students should go to this link:
https://registrar.uiowa.edu/changes-registration
Teaching Assistant Office Hours

Your teaching assistant (TA) can be found in the Student Resource Center (E208 CB) during their office hours. In addition, CHEM:2410 students can get help from other TAs who may staff that room at various times. Your TA will tell you their office hours; a listing for all other TAs will be available in the Chem Center (E225 CB).

Grading

There will be two exams (midterm and final), 11 laboratory reports, and two assessments of in-class laboratory performance (midterm and final). Plus and minus grades will be given. An A+ is only awarded for exceptional (i.e., near perfect) performance.

CLAS Recommended Grade Distribution (% of class): A 18%, B 36%, C 39%, D 5%, F 2%
CLAS Recommended Grade Average = 2.63 / 4.0
Typical Grade Average in this course = about 3.0

A total of 730 points is possible:
• Exams (Midterm 100 points and Final 150 points) = 250 points
• In-class performance assessments (2 x 50) = 100 points
• Laboratory reports plus prelab quizzes = 380 points

Lab Reports:

<table>
<thead>
<tr>
<th>Expt #</th>
<th>Title</th>
<th>Prelab Quiz</th>
<th>Report</th>
<th>Total Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Literature</td>
<td></td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>2</td>
<td>Extraction</td>
<td>10</td>
<td>25</td>
<td>35</td>
</tr>
<tr>
<td>3</td>
<td>Adipic Acid</td>
<td>2 x 10</td>
<td>15 (short)</td>
<td>35</td>
</tr>
<tr>
<td>4</td>
<td>NMR Spectrometry</td>
<td></td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>5</td>
<td>Transfer Hydrogenation</td>
<td>10</td>
<td>25</td>
<td>35</td>
</tr>
<tr>
<td>6</td>
<td>Nucleophilic Substitution</td>
<td>10</td>
<td>25</td>
<td>35</td>
</tr>
<tr>
<td>7</td>
<td>Tetraphenylporphyrin Synthesis</td>
<td>10</td>
<td>25</td>
<td>35</td>
</tr>
<tr>
<td>8</td>
<td>Biocatalytic Reduction</td>
<td>10</td>
<td>25</td>
<td>35</td>
</tr>
<tr>
<td>9</td>
<td>Suzuki Coupling</td>
<td>10</td>
<td>25</td>
<td>35</td>
</tr>
<tr>
<td>10</td>
<td>Unknowns</td>
<td>10</td>
<td>25</td>
<td>35</td>
</tr>
<tr>
<td>11</td>
<td>Solventless Aldol Reaction</td>
<td>10</td>
<td>25</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100</td>
<td>280</td>
<td>380</td>
</tr>
</tbody>
</table>

There will be SIX formal lab reports (format as instructed in the lab manual) and FIVE short lab reports (format as discussed in class). As indicated in the table above, Experiment 3 will be a short lab report. For the other experiments, formal or short lab reports will be assigned by an in-class announcement the next lecture after the experimental work is completed. Only Experiment 3 has reduced credit for the short lab reports; credit for all other lab reports will remain as shown above. The short reports are intended to relieve some of the writing workload so you can focus more on understanding the chemistry. Expect exam questions on material which might normally be included in a formal lab report (as indicated in the lab manual), even if you only wrote a short lab report.
**Submitting Lab Reports:** Lab reports are due on Fridays at 5pm via online submission. Details on the submission procedure will be discussed in class.

**Lab Reports:** For late reports, within one week of due date, these should be submitted in the usual way. A penalty of 10% of the available points per day will be assessed. Reports that are a week or more late will only be accepted/graded with special permission from the instructor.

**Regrades of Lab Reports:** Lab reports can only be submitted for regrade within a week after they were returned to you. A written request indicating the reason for the regrade must be included. The ENTIRE report will be re-evaluated. Scoring addition errors or ungraded sections are valid reasons for regrade. Negotiating for points on a report which has been correctly graded is not a valid reason for regrade.

**In-Class Performance Assessments:** There will be two 50-point evaluations of practical lab activities based on TA observations of performance in the lab. Some subjectivity is inherent in this assessment. TAs will assess understanding and mastery of practical lab techniques on the basis of their daily observations of your work
- integrating theory with lab practice to better understand lab procedures (20 points)
- efficiency and organization (10 points)
- safety and cleanliness (10 points)
- growth toward independence in laboratory operations (10 points)

After TAs provide raw scores, the section average will be normalized across all sections, so that people in any individual lab section are neither advantaged nor disadvantaged relative to the rest of the class.

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**Examinations**
There are two exams:
- Exam 1: Wednesday March 23, 2022, 6:30–8:00 pm, W10 PBB
- Exam 2: time and location to be announced later

**Exams will ONLY be given at the designated times.** A makeup exam will only be given in the case of an excused absence for University-approved reasons. Personal or family travel is NOT an excused absence.

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**Absences and Attendance**
Students are responsible for attending class, lab and for completing all assignments. In case of absence, students must contact their instructors and TA prior to their absence. Students who miss more than two classes due to unexcused absences will be given an F in the course. This rule is NOT applied for excused absences. The nature of absence must be determined based on the UI policy related to student illness, mandatory religious obligations, including Holy Day obligations, unavoidable circumstances, and University authorized activities (https://clas.uiowa.edu/students/handbook/attendance-absences).

**Illnesses:** Please respect your classmates and instructional staff. Students with symptoms of illness (for example, coronavirus, flu, cold, etc.) should notify their lab TA and instructor, and should NOT attend class. Students will not be penalized for absences that are in accordance with UI policies related to student illness or public health measures. For more information, see https://coronavirus.uiowa.edu/

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**Academic Misconduct:** Representing scientific or professional work of others as your own is unethical, dishonest, and unacceptable. The University has specific policies which govern academic
misconduct. Students who are found to be engaging in academic misconduct will be given an F in the course and the case will be reported to the Office of Academic Affairs.

**How to Avoid Academic Misconduct in This Course:**

*Exams and Quizzes:* Individuals must work alone. There must not be any communication about the content until all students have completed the exam or quiz.

*Laboratory experiments:* All work in the lab must be conducted independently by each student, except in those cases when the TA specifically instructs the class to work in pairs or groups. Open discussion before, during and after the lab is encouraged.

*Laboratory reports:* Individuals must write their own lab reports, using their own words. Discussion is encouraged while preparing to write, but all students must ultimately do their own writing. Copying the work of others, whether they are current or prior students in this course, is plagiarism, and such academic misconduct will not be tolerated.

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**Safety**

The course is designed to be safe when students follow appropriate, defined procedures and use the lab materials in the designated way. Safety is enhanced when all students are properly prepared and alert:

- You must pass the safety quiz with 100% before you are allowed to work in the lab.
- Show up and leave on time. Do not enter the lab until a TA or instructor is present. Come prepared in every aspect (content preparation, goggles, clothing)
- Wear safety eye protection (goggles) at ALL times. The TA may make a few introductory comments before any equipment or materials are out. Eye protection must be worn from that point until you leave. Group discussion may be best convened in the hall. Wearing contact lenses is discouraged.
- Feet, legs, and the midriff should be covered. Shoes that expose any part of the foot are not permitted. (You can carry a pair of sweats and tennis shoes during warm weather.)
- Eating, drinking, and smoking are prohibited in the lab at ALL times. No flames are allowed in the lab. Wash your hands right before you leave.
- Report ALL injuries of any kind to the TA. You should even report a minor cut or burn to the TA before you go to the bathroom to wash it.
- Solvents, solids, and sharp items must be disposed of properly. NOTHING goes down the sink.
- An organic chemical may pose a different level of hazard to an adult than to an unborn fetus. Students who are pregnant or think that they might become pregnant during the course should discuss their enrollment in this course with their physician(s). Material safety data sheets MSDS are available and the chemical materials used are listed in the manual or via additions/corrections provided during the lecture portion.
- Safe practice in the lab requires that students be able to hear warnings or announcements. Lab computers MAY NOT be used to play music; personal music devices even with headphones are not appropriate for labs. You should remove them and shut off cell phones before lab starts.

A student will be asked to leave the laboratory for the entire lab period (and will receive NO credit for that day’s activities or any report or assignment derived from the work) for the following behaviors:

- Repeated refusal to wear goggles or to conform to the safe lab dresscode (i.e., covered feet, legs and midriff)
- Conducting experiments or activities using equipment and chemicals other than the assigned activities. The course wishes to promote independent thinking; independent experiment design and performance is NOT allowed.
- Improper behavior that puts oneself or another individual at risk. Egregious improper behavior is grounds for dismissal from the course.