

# Chemistry 331L Course Syllabus

**Instructor:** Dr. Terry Fernando  
**Office:** 0757 Gilman  
**Office Hours:** M, W 2-3 pm or by appointment  
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Chem 331 and 331L are co-requisite courses, i.e., students in Chem 331L are required to take Chem 331 at the same time or to have already received credit in 331. Co-requisite course requirements are strictly enforced: Students who do not meet the co-requisite should drop the course or add the co-requisite as soon as possible or **they will receive an F in the course**. Students who drop or audit Chem 331 will be required to drop 331L.

## Learning Objectives

At the end of this course, you will be able to

- Understand and follow current lawful and safe chemical handling practices (e.g., personal protective devices) and the hazards associated with the use of common organic reagents.
- Carry out and understand many common organic chemistry tasks, including percent yield calculations, thin layer chromatography, recrystallization, distillation, extractions, solvent removal, and temperature control of reactions (reflux, ice-baths, etc.).
- Carry out key organic syntheses along with purifying and characterizing obtained product.
- Understand the mechanism for each synthesis as well as underlying fundamental patterns.

## Required Personal Protective Equipment (PPE)

- **Safety Eyewear:** UVEX — Model S040C Safety Glasses or Jones & Co. Visorgogs or Magid Glove and Safety Manufacturing “Sapphire” safety glasses. Safety eyewear may be purchased at the bookstore. Other types of protective eyewear require approval from course instructor.
- **Lab coat:** A mid-thigh or longer lab coat must be purchased. These are available at the bookstore and at Chemistry Stores (1400 Gilman Hall, credit card).
- **Additional PPE:** gloves (provided), and closed-toe, closed-heel shoes.

## Course Materials

- You will use Microsoft Word and provided Lab Report templates for your lab reports.
- All required lab readings, lab report templates and tutorials are posted on Canvas. Submission links for your lab reports are also on Canvas.

## Assessments (Please see Assignment Rubrics on Canvas for more detail.)

	Brief Description	Points Each	Number	Total Points
<b>Safety</b>				
Signed Safety Contract	Read the safety contract and submit a signed copy on Canvas	100	1	<b>100</b>
EHS Online Training: Lab Safety-Core Concepts.	Do the online safety training as described on Canvas. Submit evidence of completion on Canvas	200	1	<b>200</b>
<b>Normal Lab Reports</b>				
Pre-lab Questions	Answer questions in your lab report that are designed to help you understand underlying concepts, safety, and important parts of the procedure, such as amounts to use.	100		
In Lab Notes	Record observations and data while performing the experiment in enough detail that analysis and application questions can be answered including troubleshooting if the experiment does not go well.	50		
Analysis and Application Questions	Answer questions in your lab report designed to help you analyze data and draw conclusions. In addition, application questions are included to help you relate concepts learned in lab to broader lecture concepts.	100		

TA Points	Your TA will will check if you have completed your pre-lab questions at the beginning of lab class. This is worth 50 points. The other 50 points are earned by cleaning up, behaving responsibly in the lab, and wearing PPE	100		
<b>Total Points for Normal Labs</b>		350	10	<b>3500</b>
<b>Dry Lab Reports</b>				
Lab Questions	Answer questions in your lab report designed to help you understand underlying concepts	200		
<b>Total Points for Dry Labs</b>		200	2	<b>400</b>
<b>Checkout</b>				<b>100</b>
<b>Total Points for Course</b>				<b>4300</b>

**Deadline for Lab Reports is Sunday, 11:59 PM after the lab is completed.**

### Grading

Grading scale for final grades: A  $\geq$  93%, A-  $\geq$  90%, B+  $\geq$  87%, B  $\geq$  83%, B-  $\geq$  80%, C+  $\geq$  77%, C  $\geq$  73%, C-  $\geq$  70%, D+  $\geq$  67%, D  $\geq$  63%, and D-  $\geq$  60%, and F < 60%.

Grades are rounded up at the end of the semester. (e.g. 92.5% => 93% )

### Important Course Policies:

- You must arrive to class on time in order to be permitted to attend the in-lab portion of class. Important aspects of the experiment are covered during the pre-lab discussion including safety. You may not submit a lab report if you do not perform the experiment and will receive a zero for the lab report. If you have extenuating circumstances which regularly prevent you from arriving to class on time, please contact the instructor before your first class.
- Late lab report submissions are generally not accepted. Rare exceptions are made for serious reasons such as technical difficulties, severe illness, family emergencies, or similar circumstances beyond your control. If such is the case, email your instructor at [terry@iastate.edu](mailto:terry@iastate.edu) by the morning after the due date or you will receive a zero on your lab report.
- Since online makeup labs are available, there are generally no dropped labs.
- You are allowed two online makeup labs for legitimate reasons such as ISU sponsored events, serious illness, and family emergencies and other similar reasons beyond your control. You must receive permission for and must do a Webex pre-lab check before submitting an online makeup lab. See instructions in FAQ on Canvas for details. If you require additional makeup labs for legitimate reasons beyond your control, contact your instructor at [terry@iastate.edu](mailto:terry@iastate.edu) **before** your third makeup request or as soon as humanly possible to discuss alternatives.
- You must attend your assigned section unless you receive permission from your Head TA or instructor to attend a different section.
- It is your responsibility to make sure that lab reports are properly submitted by the deadline. Accidentally submitting the wrong document is not a legitimate reason for a deadline extension or a regrade.
- Any complaint regarding a grade **MUST** be brought up within 1 week of receiving the grade to have any issue addressed. **DO NOT WAIT UNTIL THE END OF THE SEMESTER.**
- Presence at Lab Check-out is mandatory unless you have an excused absence. Lab Check-out must be done during the scheduled checkout time. Check-out is worth 100 points.
- Grade concerns brought up after final grades are submitted will not be considered unless there is a demonstrable error on the part of instructor or TA involved.
- Use of personal electronic devices of any type (e.g., laptops and cell phones) is strongly discouraged in the lab. If you choose to use your own personal device in the lab, you do so at your own risk since it is a lab environment.

### Academic Misconduct

Academic Misconduct in any form is in violation of ISU *Student Disciplinary Regulations* and will not be tolerated. This includes, but is not limited to: **COPYING AND PASTING FROM ANYTHING WHICH YOU DID NOT AUTHOR, SUBMITTING LAB-NOTES AND/OR ANALYSIS AND APPLICATION QUESTIONS FOR EXPERIMENTS YOU DID NOT PERFORM, OR SUBMITTING WORK IDENTICAL OR NEARLY IDENTICAL TO ANOTHER STUDENT'S.**

Depending on the act, a student will receive an F grade on all submissions associated with the experiment, could receive an F grade for the course, and could be suspended or expelled from the University. See the Conduct Code at <http://www.dso.iastate.edu/ja> for more details and a full explanation of the ISU Academic Misconduct policies. In any case, the student will be reported to the Dean of the Students Office.

### Accessibility and Mental Health Support

Iowa State University is committed to assuring that all educational activities are free from discrimination and harassment based on disability status. Students requesting accommodations for a documented disability are required to work directly

with staff in Student Accessibility Services (SAS) to establish eligibility and learn about related processes before accommodations will be identified. After eligibility is established, SAS staff will create and issue a Notification Letter for each course listing approved reasonable accommodations. This document will be made available to the student and instructor either electronically every semester. Students and instructors are encouraged to review contents of the Notification Letters as early in the semester as possible to identify a specific, timely plan to deliver/receive the indicated accommodations. Reasonable accommodations are not retroactive in nature and are not intended to be an unfair advantage. Additional information or assistance is available online at [www.sas.dso.iastate.edu](http://www.sas.dso.iastate.edu), by contacting SAS staff by email at [accessibility@iastate.edu](mailto:accessibility@iastate.edu), or by calling 515-294-7220. Student Accessibility Services is a unit in the Dean of Students Office located at 1076 Student Services Building.

Student Counseling Services (SCS) provides confidential prevention, intervention, information, and referral services to Iowa State students. Assistance is available for students coping with relationship problems, low self-esteem, stress, loneliness, depression, cultural differences, sexual assault recovery, childhood abuse, trauma, eating disorders, substance abuse, career/major concerns, academic motivations, and other concerns. Students can initiate services at SCS during the walk-in hours (see SCS website) or during business hours if crisis counseling is needed. Check out their website for additional information: <https://counseling.iastate.edu/>.

### Freedom of Speech

Iowa State University supports and upholds the First Amendment protection of [freedom of speech](#) and the principle of [academic freedom](#) in order to foster a learning environment where open inquiry and the vigorous debate of a diversity of ideas are encouraged. Students will not be penalized for the content or viewpoints of their speech as long as student expression in a class context is germane to the subject matter of the class and conveyed in an appropriate manner.

### Experiment Schedule

Week	Week of	Experiment
1	1/15/24	Safety Contract and EHS Safety Training (online)
2	1/22/24	Intro
3	1/29/24	Functional Groups, Resonance, and Isomers
4	2/5/24	Extraction
5	2/12/24	TLC, FTIR, and MP
6	2/19/24	NMR
7	2/26/24	Intro to Nucleophilic Substitution
8	3/4/24	Elimination
9	3/11/24	HOLIDAY
10	3/18/24	Alkene Addition
11	3/25/24	Multistep 1: Cyclohexanol and Acid
12	4/1/24	Multistep 2: Epoxide
13	4/8/24	Multistep 3: Ring Opening
14	4/15/24	Bibenzyl and NBS
15	4/22/24	Check out