

## CHEM 2315 Tentative Schedule – Fall 2019

(Subject to moderate change)

Labs held on Mondays, 8:00 p.m. – 10:50 p.m., in Bingham Building Room 134

	Experiment	Pages Due at the Start of Class	Pages Due at the End of Class
	<b>8/26</b> Course Policies, Safety Contracts, Check-In <b>Synthesis Report:</b> assignment explained and given – <i>due by 10/28</i>	None	None
<b>9/2</b> No Lab – Labor Day			
1	<b>9/9</b> <sup>1</sup> Fermentation of sucrose (pages 15-16), FTIR orientation	None	Lab notebook pages for fermentation of sucrose
	<b>9/16</b> <sup>1</sup> Simple distillation of ethanol (pages 17-18) <b>Miniscale</b>	None	Lab notebook pages for distillation of ethanol
2	<b>9/23</b> <sup>2</sup> Cyclohexanol Dehydration	Lab report #1: sucrose fermentation & ethanol distillation	Lab notebook pages for Cyclohexanol Dehydration
3	<b>9/30</b> <sup>2</sup> Thin Layer Chromatography (TLC) of Mint Extracts	Lab report #2: Cyclohexanol Dehydration	Lab notebook pages for (TLC) of Mint Extracts
4	<b>10/7</b> <sup>2</sup> Chemically Active Extraction <b>(REPORT DUE ON 10/21)</b>	Lab report #3: (TLC) of Mint Extracts	Lab notebook pages for Chemically Active Extraction
5	<b>10/14</b> <sup>2</sup> Molecular Modeling and Conformational Analysis	Lab report #4: Chemically Active Extraction	Lab notebook pages for Molecular Modeling
6	<b>10/21</b> <sup>2</sup> Cyclohexane Conformations	Lab report #5: Molecular Modeling	Lab notebook pages for Cyclohexane Conformations
7	<b>10/28</b> <sup>2</sup> SN1 and SN2 Reactions of Alkyl Halides	Lab report #6: Cyclohexane Conformations <b>Synthesis Report due at the start of class</b>	Lab notebook pages for SN1/SN2 rxns of Alkyl Halides
8	<b>11/4</b> <sup>2</sup> Recrystallization	Lab report #7: SN1/SN2 rxns of Alkyl Halides	Lab notebook pages for Recrystallization
9	<b>11/11</b> <sup>1</sup> NMR orientation (procedure will be posted on Canvas)	Lab report #8: recrystallization	Lab notebook pages for NMR orientation
	<b>11/18</b> TA/Course Evaluations, Clean Up, Check Out	Lab report #9: NMR orientation	None

<sup>1</sup> Copies of these experiments are posted on our Canvas homepage.

<sup>2</sup> These experiments are available online at: <http://ion.chem.usu.edu/~harrisd/Classes/2315/CHEM%202315.html>.  
The password is "goggles4u".

**CHEMISTRY 2315 – Fall 2019**  
**Organic Chemistry Lab I**  
**Mondays, 8:00 – 10:50 p.m., Bingham Building Room B134**

**General Information**

**Instructor:** Dr. Mike Christiansen (you can call me Dr. C or just Mike)  
**Email:** [m.christiansen@usu.edu](mailto:m.christiansen@usu.edu)      **Office:** 221G Bingham Building  
**Phone:** 435-722-1761      **Home:** 435-781-0749      **Cell:** 435-828-0140  
**Office hours:** Tuesdays, 4–5 p.m.

**Materials**

**Lab Notebook (required):** Lab Notebooks are available at the USU bookstore (carbon-copy pages are absolutely necessary). ISBN-13: 978-1930882232

Goggles, full-length pants, socks, and “complete” (closed-toed) shoes are required in the laboratory. (See **Safety** below.)

**Prerequisites:** Chem 1210 and Chem 1215

**Course Description:** This class focuses primarily on providing you with hands-on experience in basic organic chemistry lab techniques and instrumentation.

**Course Objectives:**

By the end of the semester you should:

1. Become proficient at using standard organic chemistry lab techniques\*
2. Learn how to use standard analytical instrumentation, including IR and NMR\*<sup>†</sup>
3. Develop the ability to write lab reports using correct English and proper scientific style<sup>†</sup>

\*IDEA objectives 1-2

<sup>†</sup>IDEA objective 4

(For more on using the IDEA course evaluation system, I've posted a document about the IDEA evaluations on Canvas.)

**Course Fees:** \$75 lab fee for purchase of equipment and supplies

**Canvas:** Please logon to Canvas<sup>1</sup> regularly for announcements, assignments, grade postings, and alterations in the class and office hour schedules.

**Absences:** Attendance is mandatory. However, students *are* allowed one make-up lab per semester. Missing any additional labs thereafter will result in zeroes for those labs (keep in mind, though, that your lowest lab set score is dropped). **If you know ahead of time that you will miss a lab, and if the reason is valid (determined at the instructor's discretion), arrangements for a make-up lab will be made. No after-the-fact excuses/absences will be considered!** You must contact the instructor via email ([mike.christiansen@usu.edu](mailto:mike.christiansen@usu.edu)) at least one week **before** an absence.

<sup>1</sup> <https://login.usu.edu/cas/login?service=https%3A%2F%2Fmy.usu.edu%2Fpaf%2Fauthorize>

### Grade Breakdown:

<b>Lab Safety Quiz</b>		20 points (2.5%)
<b>Synthesis Report</b>		100 points (12.5%)
<b>Lab Notebook Pages</b>	(25 points each – lowest score dropped)	225 points (28.3%)
<b>Lab Reports</b>	(50 points each – lowest score dropped)	400 points (50.3%)
<b>Instructor Evaluation</b>		50 points (6.3%)
<b>Total</b>		<b>795 points</b>

Final grades will be based upon the following scale, which is subject to modification:

A: 100-93%   A-: 92-90%   B+: 89-87%   B: 86-83%   B-: 82-80%  
C+: 79-77%   C: 76-73%   C-: 72-70%   D: 69-60%   F: 59% and below

**Lab Safety Quiz:** We will take a Lab Safety Quiz on the first day of class. (See **Safety** below.)

**Synthesis Report:** 11.8 percent of your grade will come from a report you will write about a molecule from current literature that you would be interested in synthesizing. Instructions on this report will be delivered during an in-class lecture, according to our class schedule.

**Lab Notebook Pages:** Proper notebook keeping is an indispensable part of research. It is so important, in fact, that in industrial labs, notebook pages are signed by the researcher and a colleague, who acts as a witness. The notebooks then serve as legal documents to establish claims of discovery. All work done in the lab must be summarized in your notebook. Your work and grade in the lab will be evaluated largely by the quality of your lab notebook.

Before coming to lab, you should write, on top of the first notebook page for each experiment, the **title of the experiment**, followed by a brief statement of the **experiment's purpose**. The following things should then be added thereafter:

1. (When applicable) The balanced chemical equation for the reaction or process you will perform
2. The experimental procedure for the lab in question, with enough detail so you can do the experiment without referring to your text
3. All entries in your notebook must be in black or blue ink. NO PENCIL!
4. Notebook entries must not be erased or obliterated. Cross out incorrect entries with a single line and make the correct entry nearby.
5. Data must be entered into your notebook directly as you gather it. Using scraps of paper for any records for later transfer to your notebooks is unacceptable.
6. Original notebook pages must not be removed.

**Lab Reports:** Your lab reports will be computer-generated documents. They must include:

1. The title of the experiment
2. A brief description (~ 50 words) of the experiment
3. A summary of the experimental procedures and results
4. All of the data collected and calculations performed
5. A concluding statement (what was learned from the results)
6. Late reports will be penalized by 10% for the first week, and an additional 10% for each subsequent week. **I HIGHLY recommend you save all your graded work.**
7. For additional questions about lab reports, please see the **Lab Report PowerPoint Presentations** and **Sample Lab Report** on Canvas.

**Instructor Evaluation:** At the end of the semester, I will evaluate your performance over the semester based on preparedness, adherence to safety rules, cooperativeness, and ability to work efficiently and independently.

**Safety:** Before starting lab experiments, all students must read and sign the Utah State University Safety Agreement,<sup>2</sup> which is part of our first-day **Lab Safety Quiz**. Students must attend the safety lecture held on the first day of lab to become familiar with the risks and safety procedures of the laboratory.

### **General Guidelines:**

1. Individuals not wearing safety goggles, full-length pants, socks, and “complete” (closed-toed) shoes (thus, no flip flops, sandals, etc.) will not be allowed in the laboratory, no exceptions.
2. No shorts. Even capris are not recommended, due to the potential for skin damage.
3. Wear safety goggles at all times. Safety goggles are available in the laboratory. Contact lenses are not advised.
4. Avoid horseplay, goofing off, etc. Horseplay can easily result in an accident.
5. Do not talk on your cell phones during lab. If you must take a call, please do it in the hallway after notifying the instructor.
6. Listen to the instructions of laboratory staff.
7. No eating or drinking is allowed.
8. All waste chemicals must be placed in proper containers (usually in the hood).
9. Report all spills or accidents to your TA immediately for assistance.
10. A Lab coat or apron, other expendable clothing is a good idea. Don't wear your best clothing to lab. The university will not be liable for damaged clothing.
11. In order to be fair to all class members, TAs will not allow students to remain in the lab past the scheduled ending time.
12. All students must read and sign the Utah State University Chemistry and Biochemistry Departmental *Laboratory Safety Agreement* before beginning lab experiments.
13. Students must be registered for the lab section they attend. Failure to do so will result in an F letter grade being assigned to the university.

### **University Policies**

**Academic Freedom and Professional Responsibilities:** Academic freedom is the right to teach, study, discuss, investigate, discover, create, and publish freely. Academic freedom protects the rights of faculty members in teaching and of students in learning. Freedom in research is fundamental to the advancement of truth. Faculty members are entitled to full freedom in teaching, research, and creative activities, subject to the limitations imposed by professional responsibility. USU Policy 403 (<http://www.usu.edu/hr/files/uploads/Policies/403.pdf>) further defines academic freedom and professional responsibilities.

**Withdrawal Policy and “I” Grade Policy:** Students are required to complete all courses for which they are registered by the end of the semester. In some cases, a student may be unable to complete all of the coursework because of extenuating circumstances not due to poor performance or to retain financial aid. The term 'extenuating' circumstances includes: (1) incapacitating illness which prevents a student from attending classes for a minimum period of two weeks, (2) a death in the immediate family, (3) financial responsibilities requiring a student to alter a work schedule to secure employment, (4) change in work schedule as required by an employer, or (5) other emergencies deemed appropriate by the instructor.

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<sup>2</sup> See Page 51 of the “Department Safety Manual,” found at <http://www.chem.usu.edu/safety/CAB-Safety%20Manual%20Final-2016.pdf>.

**Students with Disabilities:** The Americans with Disabilities Act states: "Reasonable accommodation will be provided for all persons with disabilities in order to ensure equal participation within the program." If a student has a disability that will likely require some accommodation by the instructor, the student must contact the instructor and document the disability through the Disability Resource Center (435) 797-2444, preferably during the first week of the course. Any request for special consideration related to attendance, pedagogy, taking of examinations, etc., must be discussed with and approved by the instructor. In cooperation with the Disability Resource Center, course materials will be provided in alternative format (e.g. large print, audio, diskette, or Braille) upon request.

**Academic Integrity – the “Honor System”:** Each student has the right and duty to pursue his or her academic experience free of dishonesty. The Honor System is designed to establish the honest conduct expected and required of all Utah State University students. To enhance the learning environment at Utah State University and develop student academic integrity, each student agrees to the following Honor Pledge: "I pledge, on my honor, to conduct myself with the foremost level of academic integrity." A student who lives by the Honor Pledge is a student who does more than not cheat, falsify, or plagiarize. A student who lives by the Honor Pledge:

- espouses academic integrity as an underlying and essential principle of the Utah State University community,
- understands that each act of academic dishonesty devalues every degree that is awarded by this institution, and
- is a welcomed and valued member of Utah State University.

**The Instructor will take appropriate actions in response to Academic Dishonesty, as defined in the Student Code (available at <http://www.usu.edu/studentservices/studentcode/>). Acts of academic dishonesty include but are not limited to:**

- **Cheating:** (1) using or attempting to use or providing others with any unauthorized assistance in taking quizzes, tests, examinations, or in any other academic exercise or activity, including working in a group when the instructor has designated that the quiz, test, examination, or any other academic exercise or activity be done “individually”; (2) depending on the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments; (3) substituting for another student, or permitting another student to substitute for oneself, in taking an examination or preparing academic work; (4) acquiring tests or other academic material belonging to a faculty member, staff member, or another student without express permission; (5) continuing to write after time has been called on a quiz, test, examination, or any other academic exercise or activity; (6) submitting substantially the same work for credit in more than one class, except with prior approval of the instructor; or (7) engaging in any form of research fraud.
- **Falsification:** altering or fabricating any information or citation in an academic exercise or activity.
- **Plagiarism:** Plagiarism includes knowingly "representing by paraphrase or direct quotation, the published or unpublished work of another person as one's own in any academic exercise or activity without full and clear acknowledgment. It also includes the unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials." The penalties for plagiarism are severe. They include warning or reprimand, grade adjustment, probation, suspension, expulsion, withholding of transcripts, denial or revocation of degrees, and referral to psychological counseling.

**Grievance Process:** Students who feel they have been unfairly treated [in matters other than discipline, admission, residency, employment, traffic, and parking - which are addressed by procedures separate and independent from the Student Code] may file a grievance through the channels and procedures

described in the Student Code: <https://studentconduct.usu.edu/studentcode/article7>.

**Sexual Harassment:** Sexual harassment is defined by the Affirmative Action/Equal Employment Opportunity Commission as any "unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature." If you feel you are a victim of sexual harassment, you may talk to or file a complaint with the Office of Equity located in Old Main, Room 161, or call the O of E Office at (435) 797-1266, or go to <https://equity.usu.edu/index>.

**Student Civility Policy:** A university is a community of scholars. We learn from one another. For a community to survive and function properly, its members must treat one another with a modicum of mutual respect. Optimally, respect includes simple human courtesy. University education is an opportunity, not a commodity. This opportunity should be fully exploited by everyone involved. Academic courtesy must be observed by all participants in a class. Faculty members are participants in mutually beneficial learning activities together with students, assistants, and tutors.

Etiquette in an academic setting is not merely intrinsically valued, nor are its customs established solely for the sake of a conventional sense of propriety. Classroom courtesy is essential to create an atmosphere in which quality teaching, effective learning, and the creative advancement of a discipline can take place. To that end, we ask all instructors, facilitators, TA's, and students to do the following:

1. Behave toward one another with appropriate respect.
2. Actively participate. Learning is not a passive enterprise. Attention should focus exclusively on class material. Advance preparation by all participants is presumed.
3. Give courtesy and respect when others are asking questions or making comments.
4. Arrive on time and remain for the entire class period. In cases of unavoidable absence, notify each other in advance.
5. Do not hold conversations or activities unrelated to class discussions during class.
6. Only use electronic devices approved by the instructor (such as calculators and laptops).
7. Do not use recording devices without advance permission.
8. Please treat everyone in the class with fairness. No one should expect exception treatment in terms of due dates, class attendance, grading, or university rules.

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**I have read and understood the course syllabus.**

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**Printed Name**

**Signature**

**Date**