1. Course Description: The laboratory course is offered to those students concurrently enrolled in Chem 2310. The laboratory course offers hands on experience obtaining data in support of topics taught in the lecture sequence. Such concepts include distillation, extraction, thin-layer and column chromatography, synthesis, instrumental analysis and characterization. Students should gain an appreciation of the skills needed to get accurate data and learn chemical manipulations necessary to their chosen fields.

2. Pre-requisites: Math 1050 or equivalent; CHEM 1210 & 1220, Concurrent enrollment in Chemistry 2310, or permission of instructor.

3. Course Fee: The course fee of $40 will be used to provide the equipment, chemicals, glassware, supplies, safety equipment, and instrumentation necessary to complete the labs.

4. Course Outline: You will perform eight to ten different experiments which are posted on Blackboard.

5. Laboratory Objectives: At the successful completion of the laboratory part of the course students will be able to:
   - Solve simple Metric/English conversion problems involving gram to mole conversions.
   - Understand safety precautions when handling chemicals and other hazardous materials while learning laboratory techniques.
   - Apply problem solving skills to solve problems involving experimental data
   - Read and follow basic instructions involving chemical experiments to a successful conclusion and be able to explain their results to another student.
   - Calculate quantities involved in various chemical reactions.
   - Use their knowledge of organic chemical nomenclature to name and recognize various organic compounds found in everyday usage and encountered in the lab.
   - Write structural formulas for organic molecules encountered in the laboratory.
6. Classroom Accommodation for Students With Different Abilities: USU welcomes students with disabilities. If you have, or suspect you may have, a physical, mental health, or learning disability that may require accommodations in this course, please contact the Disability Resource Center (DRC) as early in the semester as possible (435-797-2444, drc@usu.edu). All disability related accommodations must be approved by the DRC. Once approved, the DRC will coordinate with faculty to provide accommodations.

7. Policies and Procedures:

   a. Attendance Policy: Attendance will not be taken but attending the lab section will be your only opportunity to complete each week's experiment.

   b. Hours of laboratory each week: 3 hours on Thursdays from 2:30 – 5:20 pm.

   c. Required assignments: The prior week's laboratory handed in at the beginning of the next lab exercise. The pre-lab assignment will also be turned in at the start of the lab section.

   d. Late policy: 5 points per day will be deducted for late work.

   e. Plagiarism statement: No one will take another person's writings and pass them off as his own.

   f. The data is gathered individually; questions and calculations associated with each laboratory are to be the work of each individual and not that of other students.

9. Outcomes Assessment: Student will perform the experiments in pairs. Each student will provide a written lab report in a style appropriate for a chemistry journal. The requirements of the lab report will be discussed and feedback given will be expected to be incorporated into future reports. Answers to the questions contained in each laboratory and the calculations will also demonstrate the student's understanding of the laboratory.

10. Grading Practices: All laboratory reports are worth a total of 100 points. 8-10 laboratory experiments will be performed.

    *Letter grades follow the conventional scale:* 90%, 80%, 70%, 60%, <60%

11. Laboratory Reports: You will learn to submit journal style written lab reports of your work. Spelling and grammar shall be correct. The report shall be as concise and factual as
possible without sacrificing clarity. Most importantly, the report must be an original piece reporting your work. Copying or even paraphrasing of material from textbooks, printed notes, or other reports is clearly dishonest and must be avoided. Make sure that you express your answers with the proper units and to the correct number of significant digits. Tips for improving your reports will be a constant theme. The main learning objective in this course is to learn to write a proper lab report.

12. **SAFETY** While listed here last, safety is of utmost importance. The following procedures will be observed in our laboratory work. You will sign a more detailed safety sheet before the first experiment. This is just a summary of safety issues:

   A. Safety glasses will be worn at all times covering the eyes and not around your neck. If there are any exceptions to this, you will be told at the beginning of the laboratory experiment.
   B. Leather shoes are preferred **WITH** socks. Tennis shoes may be worn but must be worn with socks. Heels, open toed shoes, sandals will **NOT** be permitted.
   C. **NO** shorts will be worn; only long pants. Skirts and hose are not appropriate laboratory attire.
   D. If you wear contact lenses, leave them home. Wear glasses under the safety glasses. Chemicals under contact lenses are most difficult to wash out.
   E. **DO NOT** under any circumstances, taste chemicals. Wash you hands well before using the bathroom during the laboratory period and immediately following the laboratory experiments. Some chemicals react to give pain on the tender parts of the body.
   F. In case of a problem in the laboratory, there are two exits both on the same side of the laboratory room. The door you come into the laboratory and at the far end by the safety shower. In case you cannot see either door, crawl along the floor to a wall, then follow the wall to one of the above mentioned exits.
   G. **DO NOT** eat or drink in the lab. Leave food and drink outside the lab.

*The instructor reserves the right to make changes to this syllabus at any time throughout the semester. Such changes will be announced during class and students not attending class are still responsible for knowing about any and all changes to the syllabus.*