

## **ChE 4003 Chemical Engineering Lab I**

Required course for ChE program

**Catalog Description:** Experimental verification of the principles of fluid flow, heat transfer, and engineering thermodynamics. Emphasis on laboratory safety, oral and written reports.

**Prerequisites:** ES 3003, ES 3073.

**Corequisites:** none

**Prerequisites by Topic:** Fluid mechanics, heat transfer, engineering thermodynamics

**Recent Textbook:** None

**Other Required Material:** None

**Course Objectives:** By the end of the semester, students will be able to:

1. Run an experiment correctly given equipment operating instructions
2. Relate a process flow diagram to the equipment
3. Analyze real world data including statistical analysis and experimental error.
4. Work effectively in a team
5. Apply the basic concepts of laboratory safety to experiments, including statistical risk analysis
6. Apply the theoretical principles learned in engineering science classes
7. Do basic experimental design
8. Present findings in written and oral formats

**Major Topics Covered in the Course:** Lab experiments cover heat transfer, fluid mechanics, and engineering thermodynamics; lectures cover laboratory safety, report writing, error analysis, and a review of engineering science principles associated with each experiment.

**Class/Laboratory Schedule:** Lecture meets for one 50-minute session each week for 14 weeks. Lab meets for one session that is up to 5 hours long each week for 14 weeks.

**Professional Component Contribution:** This course applies mathematics and basic chemistry and physics to engineering applications of thermodynamics, fluid mechanics, and heat transfer.