

Course Title: Chemical Engineering Laboratory III
Course Prefix: CHEG Course No.: 4031 Section No.: P03
Department of Chemical Engineering College of Engineering
Instructor Name: Dr. Nabila Shamim
Office Location: C.L. Wilson 201A
Office Phone: 936-261-9410
Email Address: nashamim@pvamu.edu
Prairie View, TX 77446-0519

Office Hours: M 10:00 AM - 11:00 AM

Virtual Office Hours:

Course Location: Chem. Eng. Lab. Room 137 Gilchrist

Class Meeting Days & Times: M 5:30 – 8:20 PM

Catalog Description: (0-3) Credit 1 semester hours. Continuation of CHEG 4011, but directed to sensors, reaction engineering and control systems. Study of reaction rates and equilibria in simple chemical systems. Emphasis is placed upon experimental data required for the scale-up to commercial scale equipment.

Prerequisite: Senior standing

Co-requisites: CHEG 4033

Required Text: None

Recommended Text/Readings: 1. Holman, J. P., Experimental Methods for Engineers, 4th Ed., McGrawHill, New York, 1986.

2. Fahien, R. W., Fundamentals of Transport Phenomena, McGraw-Hill, New York, 1993.

Access to Learning Resources:

VAMU Library: phone: (936) 261-1500; web: <http://www.tamu.edu/pvamu/library/>

University Bookstore: phone: (936) 261-1990; web: <https://www.bkstr.com/Home/10001-10734-1?demoKey=d>

Course Goals or Overview:

The goal of this course is to teach students laboratory skills on the areas of fluid-mechanics and chemical separations.

Course Outcomes/Objectives

At the end of this course, the student will have achieved and demonstrated the following outcomes.

1. Demonstrate ability to perform quantitative physical measurements, operate, laboratory scale equipment.
2. Demonstrate ability to plan, design, and evaluate experiments.

3. Demonstrate ability to communicate effectively in oral and written formats.
4. Demonstrate familiarity with commercial scale equipment.

Course Requirements & Evaluation Methods

This course will utilize the following instruments to determine student grades and proficiency of the learning outcomes for the course. The course has been designed to ensure that students acquire a solid grounding in ABET 2000 outcomes b, d and g.

Laboratory reports – written descriptions of lab, experiments including result calculations and conclusions.

Laboratory Oral Presentations – one or more oral assignments, often groups, designed to supplement and reinforce course material

Quizzes – announced or surprise in-class assignments to promote student accountability.

Design of One Experiment – one proposed experiment on the lab, subject areas. It will be evaluated through an oral presentation and a written report.

Grading Matrix

Instrument	Total
Quiz on safety	10%
Quiz on Experiments	15%
Lab Reports	35%
DOE report and Final Presentation	30%
Design of Experiments Quizzes	10%

Grade Determination:

A = 100 – 87pts;

B = 86 – 77pts;

C = 76 – 65pts;

D = 66 – 59pts;

F = 58pts or below

Course Procedures

Textbook Policy

Students must acquire the textbook that is listed as “required” on the course syllabus. The textbook must be acquired by the 10th class day. Students are not allowed to share textbooks with other students who are currently registered in the same class. Failure to acquire (or show proof of purchase) the required textbook by the 10th class day will result in the student being administratively dropped from the course. The University will assess financial obligations for the course to the student as with any other dropped class according to the fee schedule. In addition, your financial aid may be affected by the subsequent registration action(s).

Go to <http://www.pvamu.edu/pages/195.asp> for the Roy G. Perry College of Engineering Textbook Policy.

Conduct:

1. Students will conduct themselves in a manner that is respectful to their fellow classmates and the instructor at all times.
2. Cell phones MUST be turned off during class time. Students are NOT allowed to leave class to answer cell phones.
3. Students are NOT allowed to wear caps/hats in class
4. Arrive to class prepared to discuss lesson.
5. Always bring essential tools: Textbook, paper, calculator.

Submission of Assignments:

1. All assignments are due by default one week after being given, unless otherwise stated. All written assignments are due directly to the Instructor, prior to the start of class or the assignment will not be accepted. All assignments should be written on one side of the page only, and should use the appropriate cover sheet, with the name, assignment title and date. All pages should be numbered. Failure to use the correct format will result in the assignment grade being reduced by 20%.

Exam Policy

Reports are due as scheduled. No makeup examinations will be allowed except under documented emergencies
(See Student Handbook).

TOPICS

Topic 1 Laboratory Safety and Loss Prevention (Video Presentation)

Topic 2 Design of experiments lecture

Topic 3 Level Control (PID Control) (Expt. No. 1)

Topic 4 Determination of the system parameters in a level control system with a tank with drain (first order system) (Expt. No. 2)

Topic 5 Flow control (PID Control) (Expt. No. 3)

Topic 6 Kinetic determinations in batch reactor (Expt. No. 4)

Topic 7 Determine the system parameters in a level control system with two tanks (second order system) (Expt. No. 5)

Topic 8 Design of Experiments (Assignment project).