

New Mexico State University

Department of Chemical Engineering

ChE 315L - Process Instrumentation Laboratory

Fall 2008

Lab Experiments: Tu & Th 1:10-3:50 pm
Jett Hall 168 & Unit Operations Lab J271
Instruction & Presentations J204

Catalog Description:

ChE315L: Experiments with written and oral reports in measurement of mass, pressure, temperature, and volume; enthalpy of reactions; mass and heat balances; principles of process instrumentation and control equipment as they are applied to laboratory operation. Study of measurement error, statistical estimation and analysis.

Prerequisites: ChE 201 and ChE 211.

Instructor:	Dr. Charles Johnson	Jett Hall 252 505-646-8637 cjohnson@nmsu.edu
	Office hours:	M - Tu - Th 8-10 am
Teaching Assistant:	Venkata Daram	dvsnraju@nmsu.edu

Recommended Textbooks:

1. Long, R. L., B. Barna, C. W. Bridges, A. L. Rakow and D. B. Wilson "Guide to Writing and Problem Solving for Chemical Engineers" Kinko's Publishing Group (1983).
2. Whitmyre G. and R. L. Long "Guide To Safety In The Laboratory For Chemical Engineers" Dept. Chem. Eng., NMSU (1987).
3. Long, R. L., J. Creed and W. Desmare "A Guide To The Use Of The NMSU Library For Chemical Engineers" (1999).

References:

1. Chemical Hygiene Plan, Dept. Chem. Eng., NMSU (1993).
2. NMSU Guide to Laboratory Safety, NMSU (1995).

Course Objectives:

The goal of this course is to introduce students to some practical skills needed to be able to apply the scientific and engineering concepts acquired in earlier coursework, and to achieve the following:

- Organize and carry out experimental design and actual hands-on experiments;
- Understand safety regulations and safe operation procedures in Chemical Engineering laboratory.
- Be able to analyze and interpret experimental data with theories learned in previous courses;
- Write organized and cohesive technical memos and reports;
- Organize and prepare standard operating procedures;
- Work effectively in a team environment;
- Prepare and present technical works before colleagues and answer questions.

Projects:

The following projects will be carried out in Fall 2008.

1. Hydrogen PEM Fuel Cell
2. Friction loss in fluid flow
3. Thermocouple study
4. Viscosity of fluids
5. Heat exchanger performance

All students will have the opportunity to work on every project with your team during this semester. Each team will have a project leader for different projects. Every student will have at least one chance to be a project leader. It is the responsibility of the project leader to coordinate the team activities and make the final project presentation. However, every student needs to actively engage in the project activities and make significant contributions to the project.

Attendance:

It is the policy of NMSU that students should attend every class meeting unless valid reasons prevent doing so. Be respectful to your classmates and show up on time. Please notify Dr. Charles Johnson as early as possible if you can't attend the class due to other commitments or medical excuse.

Homework Policy:

All students are required to submit a final individual report or memo for each project. It is encouraged for teammates to collaborate on project

activities including report and presentation, but each student must submit his or her own reports.

Ethics and Misconduct:

Students are expected to follow the highest of ethical, social and moral standards as specified in the Student Code of Conduct in the NMSU Student Handbook. Cheating will be disciplined as described in the "Academic Misconduct" section of Student Handbook. Student suspected of cheating will receive zero credit for the assignment and be recorded in the student's personal file. The following specific policies for this course must be observed:

1. Copies of previous reports may not be consulted except for those on which you were the author or co-author. Final reports are not to be shared.
2. Diskettes recording data, report text, or calculation algorithms are not to be loaned or given to anyone except one's teammates, at any time.
3. All work done for these projects should be the work of members of an individual team only. You are to gain NO ADVANTAGE of ANY prior work done for ChE 315L by anyone other than yourself or your teammates. This includes, but is not limited to, old reports, oral presentations, data, old exams, and consultations with students who took ChE 315L prior to this term. The only exception is that teams and individuals working on a project may consult with the lab instructors concerning experimental procedural matters.
4. All students are expected to inform the instructors and/or the Department of any violations of the rules that they observe.
5. Any suspected violations of this policy will be dealt with seriously and submitted to the Department for their investigation.

Performance Evaluation

Points for the various activities will be assigned approximately as listed below. Class attendance and peer evaluations are part of the grading system, thus you will be submitting team, peer, and self-evaluations with each assignment you turn in. The grading is based on the entire class rather than a specific lab session. Efforts have been instituted to ensure even grading throughout different sessions.

Project Report	30%
Project memo	20%
Presentation	20%
Quiz	10%

Safety	10%
Teamwork	10%

Since this is primarily a laboratory course, less tangible quantities, – such as the quality of laboratory work, cooperation with others in and outside of the lab (based on peer evaluation), apparent interest in the course content and objectives, safety considerations etc., – will be judged by the laboratory instructors and will affect your final grade accordingly. The lab instructor will evaluate your laboratory reports for technical content and accuracy, as well as overall quality and grammatical mistakes. Your final grade will be awarded according to the following distribution:

90-100	A
80-89	B
70-79	C
60-69	D
0-59	F

ChE 315L Fall 2008 Course Outline and Tentative Schedule

Session	Date	Activity	Report Due
1	8/21	Safety and Labview Introduction J204	
2	8/26	Labview continued J169	
3	8/28	Labview continued J169	
4	9/2	Proposal Memo	Memo 1
5	9/4	Session-1	
6	9/9	Session-1	
7	9/11	Session-1	
8	9/16	Paper or Presentation for Session-1	
9	9/18	Contingency Period	Memo 2
10	9/23	Session-2	
11	9/25	Session-2	
12	9/30	Session-2	
13	10/2	Paper or Presentation for Session-2	
14	10/7	Session-3	Memo 3
15	10/9	Session-3	
16	10/14	Session-3	
17	10/16	Paper or Presentation for Session-3	
18	10/21	Session-4	Memo 4
19	10/23	Session-4	
20	10/28	Session-4	
21	10/30	Paper or Presentation for Session-4	
22	11/4	Session-5	Memo 5
23	11/6	Session-5	
24	11/11	Session-5	
25	11/13	Paper or Presentation for Session-5	
26	11/18	Session-6 Makeup or Repeat	
27	11/20	Session-6 Makeup or Repeat	
28	12/2	Session-6 Makeup or Repeat	
29	12/4	Paper or Presentation for Session-6	

Team Rotation Plan

	Session-1	Session-2	Session-3	Session-4	Session-5	Session-6
T1	Project1	Project2	Project3	Project4	Project5	Project6
T2	Project5	Project1	Project2	Project3	Project4	Project6
T3	Project4	Project5	Project1	Project2	Project3	Project6
T4	Project3	Project4	Project5	Project1	Project2	Project6

Group Members

T1				
T2				
T3				
T4				