

## REGULAR COURSE SYLLABUS

School of: Letters Arts, & Sciences

Department: Chemistry

CIP Code: 40.0506

Prefix & Course Number: CHE 3280 Crosslisted With\*: \_\_\_\_\_

Course Title: Physical Chemistry Laboratory I

Check All That Apply: Required for Major:  Required for Minor: \_\_\_\_\_ Specified Elective: \_\_\_\_\_  
Required for Concentration: \_\_\_\_\_ Elective: \_\_\_\_\_ Service Course: \_\_\_\_\_

Credit Hours: 2 (0+4)

Total Contact Hours per semester (assuming 15-16 week semester):

Lecture \_\_\_\_\_ Lab 60 Internship \_\_\_\_\_ Practicum \_\_\_\_\_ Other (please specify type and hours): \_\_\_\_\_

Schedule Type(s): A Grading Mode(s): L

Variable Topics Courses (list restrictions, including the maximum number of hours that can be earned\*\*):  
\_\_\_\_\_

\*\* NOTE: This information must be included in the course description.

Restrictions (Variable Topics Course): None

Prerequisite(s): None

Corequisite(s): CHE 3250

Prerequisite(s) or Corequisite(s): \_\_\_\_\_

Banner Enforced:

Prerequisite(s):

Corequisite(s):

Prerequisite(s) or Corequisite(s):

Catalog Course Description:

This course provides a laboratory study of the basic principles of gas dynamics, thermodynamics, equilibrium, kinetics, and data handling techniques. Technical report writing, and literature search will be emphasized.

APPROVED:

Charles G. Tindall  
Department Chair OR Program Director

11/15/05  
Date

Hal Jamny  
Dean OR Associate Dean

11/18/05  
Date

Quida S. Curran  
Associate VP, Academic Affairs

2/6/06  
Date

Prefix and Course Number: CHE 3280

**Required Reading and Other Materials will be equivalent to:**

Experiments in Physical Chemistry, D.P. Shoemaker, C.W., Garland, and J.W. Nibler; 7<sup>th</sup> Edition, McGraw Hill Publishing, 2003

**Specific, Measurable Student Behavioral Learning Objectives:**

Upon completion of this course the student should be able to:

- A. Experimentally Measure:
  - 1. pressure, volume, temperature behavior of real and ideal gases
  - 2. vapor pressures of liquids
  - 3. heat capacities
  - 4. heat of reactions
  - 5. heat of combustion
  - 6. rates of reaction
- B. Measure a variety of physical quantities:
  - 1. mass
  - 2. volume
  - 3. pressure
  - 4. temperature
  - 5. voltage
- C. Perform variety of computational techniques:
  - 1. data collection by computer
  - 2. propagation of errors
  - 3. least squares analysis
  - 4. error analysis
- D. Write lab reports
- E. Locate literature sources needed to complete assignments

**Detailed Outline of Course Content (Major Topics and Subtopics) or Outline of Field Experience/Internship (experience, responsibilities and supervision) (format: I, A, 1, a, etc.):**

- I. Laboratory Experiments
  - a. Gas behavior and temperature
  - b. Measurement of thermodynamic properties
  - c. Phase equilibria
  - d. Changes of State
  - e. Kinetics in solution
- II. Data Handling
  - a. Statistical methods
  - b. Least squares analysis
  - c. Use of the computer
- III. Literature Search.

**Evaluation of Student Performance (format: I, a, i, ii, etc.):**

Students will be given homework assignments. Students will have to prepare a formal lab report for each experiment with a full error analysis. The final grade determination will be based on the homework, the lab reports, and the performance in the laboratory.