

## CHE 105L LAB SYLLABUS

### Discovering Chemistry with Lab

Fall 2003

Section 011    W 11:00-12:50    SC 462

Reasoning Through the Discovery Process: A Study of Chemistry and Chemical Energy

Instructor: Vinay Kumar

Office Hours:    M W 9:00- 10:00 am

Office:        SC 446

TR 10:45-11:45 am

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PREREQ: None        CO REQ: CHE 105-1

**PURPOSE:** This course stresses discovery-based learning in a laboratory environment and will complement and enhance the lecture content presented in CHE 105. The lab offers an opportunity for education majors to develop reasoning and analytical skills that are essential for teachers under the Kentucky Education Reform Act (KERA).

**Notes** 1. All items on this syllabus are subject to change by the instructor.

2. Students are responsible for reading and understanding all items on this syllabus. Any items not understood must be brought to the attention of the instructor within the first two weeks of class.

### COURSE OBJECTIVES (Lab):

The students in this course are participating in a project entitled "Reasoning Through the Discovery Process: A Study of Chemistry and Chemical Energy." This study is funded by Kentucky DOE/EPSCoR. The course emphasizes the KERA approach in the teaching of chemistry to pre-teachers (elementary and middle school education majors). The following are some of the specific objectives of this laboratory course.

1. To help students develop reasoning strategies by performing discovery type activities and postlab discussion sessions.
2. To demonstrate to the students "real-life" applications of chemistry.
3. To show students how computers are utilized in the laboratory.
4. To place students in small groups in order to emphasize the effectiveness of cooperative behavior in problem solving situations.
5. To present the microscale approach as a cost efficient alternative to the traditional labs.
6. To train the students in laboratory safety appropriate to the experiments involved.
7. To prepare pre-teachers to develop and teach chemistry laboratories consistent with the KERA philosophy.

REQUIRED Lab manual: "Discovering Chemistry with Laboratory" Laboratory Manual; Julia Y. Bedell and Vinay Kumar; Northern Kentucky University.



# CHE 105L

## Fall 2003 Lab Schedule

Week No	Dates	Lab (Wed.)
1	Aug. 27	Check In Safety, Introductions
2	Sept. 3	Exp 1 Measurements
3	Sept. 10	Exp 2 Separation of a Mixture
4	Sept. 17	Exp 4 Conductivity Detector
5	Sept. 24	Exp 5 Properties of Matter
6	Oct. 1	Exp 13 Energy of Physical Processes (Lab Pro/Calculator)
7	Oct. 8	Exp 6 Chem Reaction & Energy (Computer Interfaced Exp.)
8	Oct. 15	Lab Test 1 & Practical
9	Oct. 22	Exp 7 Energy Content of Foods (Computer Interfaced Exp.)
10	Oct. 29	Exp 8 Vitamin C Analysis
11	Nov. 5	Exp 9 Acids & Bases (CBL experiment)
12	Nov. 12	Exp 10 Computer Simulations (Computer simulation Exp.)
13	Nov. 19	Exp 11 Synthesis of Esters and Polymers
14	Dec. 3	Exp 12 Identification of Plastics
15	Dec. 10	Lab Test #2, Practical, Check-out