

**CHE 105L-02  
LAB SYLLABUS**

**Discovering Chemistry with Lab**

**Fall 2004**

**Section 011 Wed 11:00 a.m. - 12:50 p.m. SC 462**

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

Instructor: Julia Y. Bedell

Office Hours: Wed. 9:45 a.m.-10:45 a.m.

Office: SC 443

Thurs. 12:30 a.m. – 1:30 a.m.

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**PREREQ:** None

**CO REQ:** CHE 105

**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 students to develop reasoning and analytical skills that are essential for pre-service teachers (elementary and middle school education majors).

**OBJECTIVES:**

The following are some of the specific objectives of this laboratory course.

1. To help students develop reasoning strategies by having discovery type activities and post-lab discussion sessions.
2. To place students in small groups in order to emphasize the effectiveness of cooperative behavior in problem solving situations.
3. To demonstrate to the students real-life applications of chemistry by utilizing food and household cleaning products in several experiments.
4. To show students how computers are used in the laboratory for monitoring, collecting and plotting data.
5. To allow the students to carry out serial dilution and acid-base titration via computer simulation.
6. To allow the students to perform a microscale redox titration.
7. To train the students in laboratory safety appropriate to the experiments involved.

## REQUIRED TEXT AND MATERIALS:

1. CHE 105 NKU Laboratory Manual: "*Discovering Chemistry with Lab*" Vinay Kumar and Julia Bedell; Department of Chemistry, Northern Kentucky University, Fall 2004 edition.
2. Safety glasses

## COURSE REQUIREMENTS (Lab):

1. **Attendance is mandatory for every laboratory session.** Missed labs will be assigned a grade of zero unless arrangements are made with the instructor. Students must provide legitimate proof to be excused from a lab.
2. Wearing of safety glasses, compliance with safety procedures (including proper waste disposal), and upkeep of the lab area comprise part of the student's participation grade. Instructor-initiated withdrawal of a student will occur if a student's conduct in the lab is judged to be unsafe.
3. Prior to each experiment, there will be a pre-lab quiz. This quiz will be based on the introductory material, the objective, assigned readings, selected portions of the experimental procedure, and safety rules.
4. Formal lab reports will be required for some of the experiments. These experiments will be identified during the semester.
5. Lab reports (including data sheet, discussion questions, and graphs) must be turned in at the beginning of the following lab. A 10% deduction will be imposed for lateness per week. Lab reports more than two weeks late will be assigned a grade of 45 out of 75 (for most of the experiments) or 60 out of 100 (for experiments with formal lab reports).
6. All written work must be legible and grammatically correct. Use only loose-leaf papers that are stapled together prior to lab. The organization and presentation of the reports will be graded. All written work must be done independently to receive credit.
7. Email Account: All students are required to provide the instructor with an email address by the second lab class. Information such as assignments or any changes in the experiments or syllabus will often be communicated by email. Students are responsible for this information.  
In the Subject heading of your e-mail identify your class (**CHE 105L**) before you start on your message. I do not open e-mail messages without proper subject headings. My **reply** to your e-mail is your confirmation that I received the message.

## GRADING:

Pre-lab Quizzes	5%
Laboratory participation, results and reports (Lab report = 75 points, Final Lab report = 100 points)	60%
Tests and Lab Practicals	35%

**LAB SCHEDULE:** Please see page 4.

**STUDENT HONOR CODE:**

The work you will do in this course is subject to the Student Honor Code. The Honor Code is a commitment to the highest degree of ethical integrity in academic conduct, a commitment that, individually and collectively, the students of Northern Kentucky University will not lie, cheat, or plagiarize to gain an academic advantage over fellow students or avoid academic requirements.

**IMPORTANT UNIVERSITY DATES:**

September 11  
October 30

Last day to drop a class with an "X"  
Last day to drop a course with a grade of "W"

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

**CHE 105 Fall 2004 LAB SCHEDULE:**

<b>Week No</b>	<b>Dates</b> (Wednesday)	<b>Lab</b>
1	Aug. 25	Check In Safety, Introductions
2	Sept. 1	Exp 1 Measurements
3	Sept. 8	Exp 2 Separation of a Mixture
4	Sept. 15	Exp 4 Conductivity Detector
5	Sept. 22	Exp 5 Properties of Matter
6	Sept. 29	Exp 13 Energy Exchanges Accompanying Solution Formation (Lab Pro System)
7	Oct. 6	Exp 6 Chem Reaction & Energy (Computer Interfaced Exp.)
8	Oct. 13	<b>Lab Test 1 &amp; Practical</b>
9	Oct. 20	Exp 7 Energy Content of Foods (Computer Interfaced Exp.)
10	Oct. 27	Exp 8 Vitamin C Analysis
11	Nov. 3	Exp 9 Acids & Bases
12	Nov. 10	Exp 10 Computer Simulations of Serial Dilution and Titration
13	Nov. 17	Exp 11 Synthesis of Esters and Polymers
14	Nov. 24	<i>Thanksgiving Holiday</i>
15	Dec. 1	Exp 12 Identification of Plastics
16	Dec. 8	<b>Lab Test #2, Practical, Check-out</b>