

**CHE 105L-01
LAB SYLLABUS**

Discovering Chemistry with Lab

Fall 2007

Section 01 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:	Wednesday	9:30 a.m. -11 a.m.
Office:	SC 322			3 p.m. – 3:30 p.m.
Email:	bedell@nku.edu	Electronic hours:	Tuesday	TBA
			Other hours by appointment	
Phone:	(859) 572-5432			

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).

MAJOR OBJECTIVES (Lab):

The course emphasizes the KERA approach in the teaching of chemistry to pre-teachers (elementary and middle school education majors). The major objectives of this laboratory course are:

1. To help students develop reasoning strategies by performing activities that lend themselves to a guided-inquiry approach.
2. To show students how common, safe and inexpensive household materials can be used to teach chemical concepts.
3. To show students how data in the lab is collected, displayed and analyzed using computers, calculators and temperature and pH sensors.
4. To let students work in small groups in order to emphasize the effectiveness of cooperative behavior in solving scientific problems.
5. To present the micro scale approach as a cost efficient alternative to the traditional lab, students carry out a titration on a micro scale.
6. To emphasize lab safety students are required to follow basic safety rules when working in the laboratory.
7. To prepare pre-teachers to develop and teach science activities consistent with the KERA philosophy.

STUDENT LEARNING OUTCOMES:

1. Explain the major concepts and experimental findings in the chemical sciences.
2. Demonstrate the ability to carry out experimental protocols using modern instrumentation and methods.
3. Utilize critical thinking skills to apply concept knowledge and adapt experimental techniques to form and test hypotheses and to solve scientific problems
4. Compile, critically evaluate, and interpret scientific information and data.
5. Effectively communicate scientific information through written and oral means.
6. Apply effective group strategies to solve scientific problems.
7. Apply computer technology and other technologies in the comprehension, interpretation, and presentation of the chemical sciences.

REQUIRED TEXT AND MATERIALS:

1. CHE 105 NKU Laboratory Manual (*Discovering Chemistry with Lab*)
2. Safety glasses and sponge

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. There will be no make-up quiz and a grade of zero will be assigned for a missed quiz.
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: All students are required to provide the instructor with a current email address by the second lab class. Anytime you communicate with me via email please observe the following protocol.

- In the Subject heading of your email identify your class (**CHE 105L-01**) before you start on your message. I do not open e-mail messages without proper subject headings.
 - You should present your email similar to a letter or memo.
 - My reply to your e-mail is your confirmation that I received the message.
8. Student access to Blackboard is required. Students are responsible for any information and updates posted on Blackboard.

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.

ADDITIONAL INFORMATION

Policies of the Department of Chemistry at Northern Kentucky University

- All items on syllabi are subject to change by the instructor.
- The work you will do in any 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. Cheating will not be tolerated. In accordance with the Code of Student Rights and Responsibilities, faculty members have the right to determine actions to be taken when a student is caught cheating. In this class, students caught cheating or plagiarizing for the first time will receive a grade of zero for that test or assignment. Students caught cheating or plagiarizing a second time will receive an F for the course and will be reported to the Dean of Students.
- Cell phones and pagers can only be used for emergency purposes.
- 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.
- "Students with disabilities who require accommodations (academic adjustments, auxiliary aids or services) for this course must register with the Office of Disability Services; University Center Suite 320; (859) 572-6373. Verification of your disability is required in the disability services office for you to receive reasonable academic accommodations. For more information visit website at www.nku.edu/~disability."
- If you withdraw from the lecture course, you MUST also withdraw from the lab course.
- Faculty members reserve the right to dismiss or to have removed a disruptive student from their classrooms.

CHE 105L Fall 2007 Lab Schedule

Week No	Dates	Lab (Wed)
1	Aug. 22	Introduction, Lab Safety, and Check-In
2	Aug. 29	Exp 1 Measurements
3	Sept. 5	Exp 2 Separation of a Mixture
4	Sept. 12	Exp 4 Conductivity Detector
5	Sept. 19	Exp 5 Properties of Matter
6	Sept. 26	Exp 13 Energy of Physical Processes (Lab Pro/Calculator)
7	Oct. 3	Exp 6 Chem Reaction & Energy (Computer Interface Exp.)
8	Oct. 10	Lab Test 1 (exps 1,2,4,5,13, 6) & Lab Practical (TBA)
9	Oct. 17	Exp 7 Energy Content of Foods (Computer Interface Exp.)
10	Oct. 24	Exp 8 Vitamin C Analysis
11	Oct. 31	Exp 9 Acids & Bases (CBL experiment)
12	Nov. 7	Exp 10 Acid-base titration (Computer simulation Exp.)
13	Nov. 14	Exp 11 Synthesis of Esters & Polymers
14	Nov. 21	Thanksgiving holiday
15	Nov. 28	Exp 12 Identification of Plastics
16	Dec. 5	Lab Test #2 (exps 7,8,9,10,11,12), Lab Practical (TBA)

IMPORTANT UNIVERSITY DATES:

October 29	Last day to drop a course with a grade of "W"
November 21-24	No classes (Thanksgiving Holiday)