

**CHE 105-001,002  
COURSE SYLLABUS**

**Discovering Chemistry with Lab**  
**MWF 10.00-10.50a SC 308**

**Fall 2004**

**Instructor: Vinay Kumar**  
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Office Hours: MWF 9:00 - 9:50a  
T 10:30 -11:30a  
Other hours by appointment.

**PREREQUISITE:** None                    **COREQUISITE:** CHE 105L(11.00 am or 1.00pm section)

**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.**

**REQUIRED COURSE MATERIALS:**

1. *World of Chemistry* textbook (Second Edition), M. D. Joesten and J. L. Wood, Saunders College Publishing Company, 1996.
2. General Chemistry Interactive CD-ROM version 3.0, Thomson, Brooks/Cole
3. *Discovering Chemistry with Lab* ; Lab Manual; Vinay Kumar and Julia Y. Bedell, Department of Chemistry, NKU; Fall 2004 edition.

**COURSE Web page:** This syllabus and other pertinent information about the course, including the assignments, are available on the CHE 105 web page on the internet; <http://www.nku.edu/~chemistry/che105>

**PURPOSE:**

This chemistry course integrates content presentation with laboratory experience and small group learning activities. Through these three components the students will have the opportunity to acquire the knowledge, experience the process of applying the knowledge, and construct a better understanding of chemistry and chemical issues. In so doing, this course will address both the content and the process of learning chemistry.

This course was funded by a matching grant from DOE/KyEPSCoR and models teaching strategies recommended in the science education reform literature (including the KERA philosophy) in the teaching of chemistry to elementary and middle school education majors. A better understanding and appreciation of chemistry and the related issues by the pre-service teachers should impact positively toward the teaching of science in their future classrooms. Many basic chemical principles and applications will be presented using the multimedia approach. Videodiscs, CD-ROM, Internet, and HyperStudio stacks will be used to illustrate chemical concepts that are difficult to present in the traditional lecture format.

**LECTURE COURSE TOPICS:** The following chapters will be covered in the order shown below. Sections to be covered are shown below and on the CHE 105 CONTENT document (**see attached**).

<u>Chapter No.</u>	<u>Title</u>
1	Living in a World of Chemistry (sec. 1.1 thru 1.4)
2	Chemical View of Matter (sec. 2.1-2.7(skip pp 34,35), 2.8)
3	Atoms (sec. 3.1 thru 3.5; last page 74)
4	The Periodic Table (sec. 4.1-4.5; last page 103)
6	Chemical Bonds (sec. 6.1-6.3, 6.7, and 6.8)
8	Chemical Reactivity
7	States of Matter and Solutions
10	Oxidation and Reduction
9	Acids and Bases
12	Energy and Hydrocarbons
14	Polymers
13	Alternate Energy Resources
16	Consumer Chemistry

### **COURSE OBJECTIVES (Lecture):**

1. To promote science literacy in chemistry and to relate this science content to real-life issues.
2. To incorporate student-centered learning by conducting small group activities that allow students to lead and assist each other in constructing their knowledge. The instructor, in this case, becomes a monitor and a facilitator.
3. To provide hands-on chemistry experiments that include guided-inquiry and discovery approaches.
4. To help students develop reasoning strategies by performing discovery/small group activities, and conduct post-lab discussions of laboratory experiences.
5. To effectively model the use of educational technology in the classroom and in the laboratory. Computer-based experiments are carried out in the lab and the multimedia approach integrated into the curriculum by using computers, videodiscs, CD-ROM and other electronic media.

### **LECTURE COURSE REQUIREMENTS:**

1. **Attendance:** The attendance will be taken during each lecture period. A student missing a class is responsible for all the information and assignments presented in class, including any announcements.
2. **Assignments :** You will be given assignments based on handouts, the internet and CD-ROM. These will be collected and will not be accepted after the due date. The assignments and their due dates will be announced in the class and posted on the CHE 105 Web page.
3. **Homework:** Homework based on readings, and questions and problems at the end of each chapter in the text book or the CD-ROM will be assigned (**see attached CHE 105 CONTENT document**). Homework will not be collected or graded.

4. **Group Teaching Presentation:** Students in groups of 3-4 will select, research, and teach a topic relating to Energy Resources. In addition, a written paper will also be required from each group. The 15-20 minute presentation on December 1 or December 3 should include the history and development of the resource, a thorough explanation of the production of energy, and the advantages and disadvantages of this energy resource. The group will be graded based on the cohesiveness of the presentation, the creativity of the format, the use of multiple resources (demonstration, multi-media ...etc.), and the clarity of the presentation. There will be a separate grade for the written paper.
5. **Tests:** There will be three one-hour tests and a comprehensive final exam.

<b>*Test Dates:</b>	Test #1	Mon	Sept. 20
	Test #2	Fri	Oct. 22
	Test #3	Fri	Nov. 19
	Final Exam	Wed	Dec. 15 (10:10a-12:10)

### HONOR CODE

As in all other chemistry courses the NKU Honor Code will be enforced in this class. For more information on the Honor Code, please visit the Dean of Students website:

<http://www.nku.edu/~deanstudents/HonorCode.htm>

\*Test dates will be confirmed a week before the actual date.

### TEST MAKE-UP POLICY:

Soon after missing a test the student must contact the instructor as soon as possible and make an appointment to discuss the situation in person, preferably, in my office (SC 446). As a general rule, there will be no make-up tests. However, in the case of emergencies and unavoidable situations, at the discretion of the instructor, either a make-up test will be considered or in lieu of test, the final exam grade may count an additional 10%. This policy will be applicable for only one missed test.

6. **Post-lab discussions :** Every Friday some time will be set aside for post-lab discussion or to answer any questions pertaining to the experiment in the lab.

### GRADE (will be based as follows):

3 Tests	30% (10% each test)
Assignments	10%
Group Teaching Project	10%
Final Exam	15%
Final Lab Grade	35%

**LECTURE COURSE SCHEDULE:** is posted on the course web page. Please make a hard copy of this document for keeping in your folder.

### IMPORTANT UNIVERSITY DATES:

Oct. 30	Last day to drop a course with a grade of "w"
Oct. 18-19	Fall Break