Syllabus for
CHE 112—General Chemistry II Laboratory
1 Credit Hour
Summer 2003

I. COURSE DESCRIPTION

Provides an opportunity to correlate the physical and chemical properties of different substances with concepts examined in the lecture. Experiments are conducted in kinetics, calorimetry, electrochemistry and solutions. (Daily recitation immediately followed by a 2-hour lab.)
Prerequisites: CHE 111 Lecture and Lab.
Co requisite: CHE 112 Lecture.
Lab Fee: $35.

The major purpose of this introductory laboratory course in chemistry is to reinforce the basic concepts and techniques presented in the lecture part of the course. The laboratory experience provides an opportunity to apply the scientific method to concepts presented in the textbook and the lecture, and to do so in a way as to foster expanded experiences and skills. Experiments will be done with the aim of involving the student in typical laboratory problems requiring skill and accuracy. The student will learn specific techniques, collect data, record that information neatly and accurately, and come to specific conclusions concerning the significance of results. There will also be an emphasis on writing formal laboratory reports.

II. COURSE GOALS

The purpose of this course is for students to learn techniques and investigate the properties of various materials as they pertain to chemical aspects of life. Chemical theory will be given to help explain results and students will be expected to draw from several informational sources to be able to draw conclusions.

III. COURSE OBJECTIVES

A. Terminal Objectives
As a result of successfully completing this course, the student will be able to do the following:
1. Accurately follow experimental procedures.
2. Correctly operate various pieces of laboratory equipment.
3. Collect complete and accurate experimental observations.
4. Apply dimensional analysis in solving typical laboratory problems.
5. Describe observed chemical and physical changes.

B. Objectives for Students in Teacher Preparation Programs
The Teacher Preparation Program meets the competency-based requirements established by the Oklahoma Commission on Teacher Preparation. This course has no competencies that apply to its content.

IV. TEXTBOOKS

A. Required Textbooks
Neidig, H. A., editor. Modular Laboratory Programs in Chemistry. Palmyra, Pennsylvania: Chemical Education Resources, Inc., 2000.

B. Optional/Recommended Materials
   1. Scientific Calculator
   2. Periodic Table of the Elements

V. POLICIES AND PROCEDURES

A. University Policies and Procedures
   1. Attendance at each class or laboratory is mandatory at Oral Roberts University.
   2. Double cuts will be assessed for absences immediately preceding or following holidays.
   3. Excessive absences can reduce a student's grade or deny credit for the course.
   4. Students taking a late exam because of an unauthorized absence will be charged a late exam fee.
   5. Students and faculty at Oral Roberts University adhere to all laws addressing the ethical use of others' materials, whether it is in the form of print, video, multimedia, or computer software.
   6. Final exams cannot be given before their scheduled times. Students need to check the final exam schedule before planning return flights or other events at the end of the semester.

B. School and/or Department Policies and Procedures
   1. The Department of Chemistry adheres to the Assessment policy concerning plagiarism as described in the 2000-2002 University Catalog p. 33, "Written assignments using sources must demonstrate ethical and accurate use of source material. Plagiarism and any unethical or inappropriate use of sources will not be tolerated."
   2. The following assessment actions will be taken in the of event of documented instances of plagiarism on written assignments, copying of homework assignments, or cheating during examinations:
      a. An automatic zero will be given for the assignment or exam.
      b. The original assignment or exam will be kept in the student file and a copy will be given to the student. This could have a negative impact on letters of reference and admission to graduate schools and other postgraduate programs.
      c. The Department will take repeated offences as grounds for further action.

C. Course Policies and Procedures
   1. Should a student miss the scheduled laboratory period they will receive a zero for that lab and will not be allowed to make up the work.
   3. The student is still responsible for the material and should make arrangements with the instructor to go over the material should there be any questions.
   4. The student is allowed to drop his lowest lab score, for grading purposes, and an excused absence will not be held against him.
   5. However, more than three excused absences will result in an incomplete and the excess excused work must be made up the following semester.
   6. Evaluation Procedures

a.	Weekly laboratory experiments (including formal writing)	70%
b.	Quizzes	10%
c.	Attitude and technique (including use of Tech. Guide)	5%
d.	Final Exam	15%

e. The semester's grade based on the above will be:

A 90-100%
B 80-89%
C 70-79%
D 60-69%
F Below 60%

7. Portfolio Requirements

There are no Teacher candidate portfolio requirements that apply to this course.

VI. COURSE CALENDAR

Day	ASSIGNMENT
1	Introduction to Course Handout: Using Computers to Graph Chemical Laboratory Data
2	507: Determining Molar Mass by Freezing-Point Depression in Naphthalene
3	368: Heat of Neutralization
4	508: Studying the Kinetics of a Chemical Reaction
5	Introduction to Spectroscopy: Proton NMR, IR and MS
6	Introduction to Spectroscopy: Continued
7	494: Monitoring Acid-Base Titrations With a pH Meter 337: Laboratory Techniques: pH Meter **READ ONLY 511: Laboratory Techniques: Measuring the Volume of Liquids **
8	Handout: Hydrolysis (Acid-Base Properties of Salt Solutions)
9	463: Nonsulfide Qualitative Analysis of Cations: Separating and Identifying Group A Cations (Hg_2^{+2}, Ag^{+}, Pb^{+2} ions) and 366: The Chemistry and Qualitative Analysis of Cations: Groups III and IV
10	438: Determining the Formula and Estimating the Dissociation Constant of a Complex Ion
11	Introduction to Spectroscopy: Conclusion and Formal Lab Report
12	414: Determining the Comparative Reactivities of Several Metals
13	450: Studying Electrochemical Half-Cells and Half-Reactions
14	FINAL EXAM

VII. ASSESSMENT SUMMARY

	CHE 112-61 to 72	General Chemistry II Lab	Chemistry
MISSION The lifestyle at ORU is rooted in the word "Wholeness." ORU seeks to educate the whole person, with balanced emphasis placed on the development of the mind, spirit, and body. GENERAL OUTCOMES 1. Spiritual Development 2. Physical Development 3. Communication 4. Analysis 5. Problem Solving 6. Valuing in Decision-making 7. Social Interaction 8. Global Perspectives 9. Effective Citizenship 10. Aesthetic Responsiveness	MAJOR OUTCOMES Global Perspective Graduate globally minded pre-medical and pre-dental students who choose to use their profession to heal the sick around the world. Participates in summer mission team to work outside U.S. Valuing in Decision-Making Spiritual Development Make sound scientific decisions in line with Biblical principles (Pro-life vs. Pro-choice). Critical Thinking Problem Solving Graduate students with working knowledge of chemical concepts and marketable skills. Analyze chemical problems and offer solutions. Communication Communicate effectively and scientifically using the language, concepts, and models of chemistry. Analysis Exhibit competency in researching the literature and use of the information to effectively analyze and interpret data and strategies.	COURSE GOALS Display proficiency in basic lab techniques and skills, with added difficulty for more complex situations. Investigate properties of various materials as they pertain to chemical aspects of life. Perform experiments requiring skill and accuracy and interpret results to a meaningful conclusion. Gain practical, hands-on experience of theoretical concepts that help form a basic foundation for further study in science.	ASSESSMENT OF COURSE GOALS STIMULI Examinations Written reports Demonstration of proficiency in laboratory skill CRITERIA Teacher assessment