

Syllabus for  
**CHE 112--General Chemistry II Lecture**  
3 Credit Hours  
Spring 2005

I. COURSE DESCRIPTION

Continues the basic study of the physical and chemical properties of matter. Topics include thermodynamics, kinetics, equilibria, colligative properties, and electro-chemistry.

Prerequisites: CHE 111 Lecture and Lab.

Corequisite: CHE 112 Lab.

CHE 112 is a three-credit-hour general chemistry course. The teaching mode is primarily lecture. The course is designed to help students in identifying and applying chemical principles and in visualizing their physical significance.

II. COURSE GOALS

The purpose of this course is to continue to build a foundation of basic chemical vocabulary and concepts, and to strengthen chemical problem-solving abilities.

III. STUDENT LEARNING OUTCOMES FOR THIS COURSE

A. Terminal Objectives

As a result of successfully completing this course, the student will be able to do the following:

1. State and discuss the essential concepts and characteristics of solutions, thermodynamics, kinetics, equilibria, and electrochemistry
2. Solve problems dealing with chemical solutions, thermodynamics, kinetics, equilibria, and electrochemistry

B. Unit Objectives

As a result of successfully completing this unit, the student will be able to do the following:

1. Perform calculations pertaining to concentrations and colligative properties.
2. Calculate various thermodynamic parameters.
3. Perform calculations involving rate laws and integrated rate laws.
4. Determine the concentrations of various chemical species in a system at equilibrium.
5. Predict whether or not a precipitate will form in a given solution.
6. Diagram galvanic and electrolytic cells and determine their cell potentials.

IV. TEXTBOOKS

A. Required Textbooks

Whitten, Kenneth, Raymond Davis, Larry Peck, and George Peck. General Chemistry, 7<sup>th</sup> ed. Belmont, CA: Brooks/Cole – Thomson Learning, 2004.

B. Optional Textbooks and/or Reading Material

Keeney, Wendy, and Yi-Noo Tang. Student Solutions Manual. Belmont, CA: Brooks/Cole – Thomson Learning, 2004

## 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 University Catalog, "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 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.
3. Any ePortfolio activity required in this course must be completed and assessed prior to the end of the semester to receive course credit, otherwise a grade of incomplete will be assigned.

### C. Course Policies and Procedures

#### 1. Evaluation Procedures

##### a. Examinations

There are four, hourly exams during the course of the semester, plus a final exam. The lowest of the four exam grades is dropped; therefore, there are **no make-up** exams. If a second exam is missed for a valid reason, then a make-up can be scheduled. The final exam is comprehensive.

##### b. Quizzes

There are five online quizzes and five homework sets given during the course of the semester.

##### c. Record of points

	<u>Points Possible</u>
Hour exams—100 pts each (count 3 of 4 )	300
Final exam	115
Quizzes	60
Homework	60
Attendance	<u>15</u>
Total Possible Points	550

##### d. Approximate curve for overall course

A	88-100%	D	58-67%
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B	78-87%	F	less than 58%
C	68-77%		

2. Other Policies and/or Procedures  
Fifteen points are awarded for perfect attendance with five points being deducted for each of the first three unexcused absences.

## VI. COURSE CALENDAR

<u>Week</u>	<u>Week of</u>	<u>Topic</u>	<u>Assignment</u>
1	Jan. 10	Solutions	Chapter 14
2	Jan. 17	Solutions	Chapter 14
3	Jan. 24	Thermodynamics	Chapter 15
4	Jan 31	Thermodynamics ( <b>EXAM 1</b> ) Kinetics	Chapter 15 Chapter 16
5	Feb. 7	Kinetics	Chapter 16
6	Feb. 14	Kinetics Equilibrium	Chapter 16 Chapter 17
7	Feb. 21	Equilibrium ( <b>EXAM 2</b> )	Chapter 17
8	Feb. 28	Acids and Bases Acid and Base Equilibria	Chapter 10 Chapter 18
9	Mar. 7	Acid and Base Equilibria Hydrolysis	Chapter 18 Chapter 19
	Mar. 14	<b>SPRING BREAK</b>	
10	Mar. 21	Buffers	Chapter 18
11	Mar. 28	Titrations ( <b>EXAM 3</b> ) Solubility	Chapter 19 Chapter 20
12	Apr. 4	Solubility	Chapter 20
13	Apr. 11	Electrochemistry	Chapter 21
14	Apr. 18	Electrochemistry Nuclear Chemistry ( <b>EXAM 4</b> )	Chapter 21 Chapter 26
15	Apr. 25	Final Examination Week	

## Course Inventory for ORU's Student Learning Outcomes

### (CHE 112 General Chemistry II Lecture) (Spring 2005)

This course contributes to the ORU student learning outcomes as indicated below:

**Significant Contribution** – Addresses the outcome directly and includes targeted assessment.

**Moderate Contribution** – Addresses the outcome directly or indirectly and includes some assessment.

**Minimal Contribution** – Addresses the outcome indirectly and includes little or no assessment.

**No Contribution** – Does not address the outcome.

The Student Learning Glossary at <http://ir.oru.edu/doc/glossary.pdf> defines each outcome and each of the proficiencies/capacities.

OUTCOMES & Proficiencies/Capacities		Significant Contribution	Moderate Contribution	Minimal Contribution	No Contribution
<b>1</b>	<b>Outcome #1 – Spiritually Alive</b> Proficiencies/Capacities				
1A	Biblical knowledge				X
1B	Sensitivity to the Holy Spirit			X	
1C	Evangelistic capability				X
1D	Ethical behavior			X	
<b>2</b>	<b>Outcome #2 – Intellectually Alert</b> Proficiencies/Capacities				
2A	Critical thinking	X			
2B	Information literacy			X	
2C	Global & historical perspectives			X	
2D	Aesthetic appreciation			X	
2E	Intellectual creativity		X		
<b>3</b>	<b>Outcome #3 – Physically Disciplined</b> Proficiencies/Capacities				
3A	Healthy lifestyle			X	
3B	Physically disciplined lifestyle			X	
<b>4</b>	<b>Outcome #4 – Socially Adept</b> Proficiencies/Capacities				
4A	Communication skills		X		
4B	Interpersonal skills		X		
4C	Appreciation of cultural & linguistic differences			X	
4D	Responsible citizenship			X	
4E	Leadership capacity			X	