

HAROLD WASHINGTON COLLEGE
MASTER SYLLABUS – COLLEGE CREDIT COURSE

1. TITLE, NUMBER, AND CLASSIFICATION:

Name of Course General Chemistry II
Department Name Physical Science
Number Code 073
Course Number: 203

2. COURSE TERM: 16 Week Semester

3. CREDIT AND CONTACT HOURS:

(i) credit hours 5 (ii) contact hours per week 8 (iii) types of activities
x Lecture/Discussion
x Lab
Clinical/Work Experience
Other

4. PREREQUISITES - if none check here ; otherwise describe below:
Grade of C or better in Chemistry 201, or Consent of Department Chairperson.
Completion of Math 140 strongly recommended.

5. CATALOG DESCRIPTION - write below, as in current college catalog
Topics include equilibrium, acid-base equilibria, solubility equilibria, kinetics, thermodynamics, electrochemistry, coordination compounds, nuclear chemistry and descriptive inorganic chemistry. Writing assignments, as appropriate to the discipline, are part of the course.
4 lecture and 4 lab hours per week

6. STUDENTS FOR WHOM THE COURSE IS INTENDED
Pre-med, pre-pharmacy, and other health sciences, pre-engineering, and chemistry majors.

7. COURSE OBJECTIVES
The student is expected to demonstrate adequate knowledge of basic chemistry concepts, tools and associated laws and equations pertaining to the following topics:

- Describe rates of reaction and the factors that influence them.
- Describe chemical equilibria in all phases.
- Describe the behavior of acids and bases.
- Apply chemical thermodynamics to explain the behavior of reactions systems.
- Describe electrochemical reactions and the factors affecting them.
- Describe nuclear reactions.

These topics are addressed both in lecture and in the laboratory.

8. STUDENT LEARNING OUTCOMES

- Predict the reaction rate dependence on reactant concentration, and the effect of temperature.
- Use equilibrium constants to estimate the concentration of products and reactants.
- Manipulate the equilibrium constant expression, and the Henderson-Hasselbalch equation to obtain the pH of any solution.
- Predict heats of reaction, entropy and free energy changes, and equilibrium constants
- Balance redox reactions, calculate standard electrode potentials, and use the Nernst equation to calculate potentials.
- Predict fission, fusion, and radioactive decay products, and balance nuclear reaction equations.

9. TOPICAL COURSE OUTLINE:

Suggested outline:

- Thermochemistry
- Equilibrium
- Acids and Bases
- Aqueous Equilibrium
- Kinetics
- Chemical Thermodynamics
- Electrochemistry
- Nuclear Chemistry

10. TEXTS AND MATERIALS USED: List of books and/or materials suggested for this course.

- Textbook: *Chemistry*, 9th Edition, by Brown, LeMay, Bursten, and Burdge, Prentice Hall, NJ (2003).
- Laboratory Materials: Written by Harold Washington College faculty and provided by the instructor either through Blackboard or for a nominal fee when reproduced by the college's reproduction staff.
- Scientific Calculator
- Safety Glasses

11. AMOUNT OF WRITING REQUIRED:

Writing is required in the form of essay questions in exams and quizzes and as a fundamental part of the laboratory reports that have to be turned in after the conclusion of each experiment.

12. METHODS OF EVALUATION: (Direct and indirect)

Suggested: Exams, laboratory reports, quizzes, homework, and special assignments.

13. AUTHORIZED SIGNATURE AND FILE DATE: DEPARTMENT AND CAMPUS

Physical Science Department
Harold Washington College

5/06