

WAYNE COMMUNITY COLLEGE
CHM 121 Foundations of Chemistry

Class Hours: 3

Lab: 0

Clinical/Wk Exp: 0

Semester Hours: 3

Instructor Information

Course Description (CCL)

This course is designed for those who have no previous high school chemistry or a grade of C or less in high school chemistry. Topics include matter, structure of the atom, nomenclature, chemical equations, bonding and reactions; mathematical topics include measurements, scientific notation, and stoichiometry. Upon completion, students should be able to demonstrate an understanding of chemical concepts and an ability to solve related problems in subsequent chemistry courses.

Prerequisite

None

Co-requisite

None

Program Learning Outcomes

The Associate Degree Programs in arts, science, and fine arts prepare students to transfer to a four-year college for a baccalaureate degree (B.A. or B.S.). Graduates of these two-year programs complete the academic requirements and develop the skills in analysis, interpretation, and communication necessary for transfer to a four-year institution.

Students enrolled in these programs should be able to do the following:

1. Recognize characteristics of life-long learning: independent thinking, self-discipline, and ethical behavior.
2. Demonstrate the technological skills needed to advance academic pursuits at a senior institution.
3. Apply a set of analytical and problem solving skills that can be applied to real-world situations.
4. Demonstrate interpersonal skills that reflect an understanding of diversity and the need for teamwork.
5. Communicate information to a variety of audiences using appropriate written, spoken, and/or visual methods.

Course Learning Outcomes

Upon completion of this course, you should be able to do the following:

1. solve problems dealing with the composition of matter.
2. solve problems dealing with chemical equations.
3. solve problems dealing with atomic structure and the periodic table.
4. solve problems dealing with the union of atoms.
5. solve problems dealing with solutions.
6. demonstrate a knowledge of inorganic nomenclature.
7. solve problems dealing with oxidation and reduction.
8. demonstrate a knowledge of organic nomenclature and structure.

See attached for complete list of subcompetencies and tasks.

Required Textbook

Stoker, **Introduction to Chemical Principles**, 7th Edition, Prentice Hall

Other Required Materials/Software

Notebook, pencil, scientific calculator and access to internet.

Learning/Teaching Methods

Lectures, demonstrations and quizzes

Course Requirements / Methods of Evaluation

To demonstrate attainment of learning outcomes for CHM 121, you must achieve an overall average of 70 or better. To achieve these learning outcomes, you must successfully complete the following:

1. Weekly quizzes 70% of Grade
2. Mid-Term Exam 15% of Grade
3. Final exam 15% of Grade

Grading Policy/Criteria

CHM 121 classes use a ten-point grading scale. The following scale will be used in determining your grade:

- A = 100 – 90% of total points and completion of all tasks.
- B = 89 – 80% of total points and completion of all tasks.
- C = 79 – 70% of total points and completion of all tasks.
- D = 69 -- 60% of total points and/or up to 2 incomplete tasks.
- F = < 60% of total points and/or more than 2 incomplete tasks.

Academic Integrity Statement

See your WCC Student Handbook or College Catalog for the WCC Code of Student Academic Integrity Policy. Any student caught violating the WCC Code of Student Academic Integrity Policy (i.e., cheating, plagiarizing, or other dishonorable acts), in academic work is subject to disciplinary action.

Students with Disabilities

WCC is committed to seeing that students with disabilities have equal access to and participation in all programs of study. For further explanation, please note the Students with Disabilities policy in the WCC catalog or the Student Handbook. Students with disabilities can contact the Disability Coordinator, Mrs. Caroline Smith, in the Student Development office, Room WLC 115, or at 919-735-5152, extension 223 or csmith@waynecc.edu.

Non-Discriminatory Statement

Wayne Community College is committed to a policy of providing educational opportunities to all students regardless of economic or social status, beliefs, sexual orientation, age, national origin, or physical or mental disability.

Student Attendance Policy

The college considers regular class attendance essential to good scholarship and to a workplace ethic that emphasizes responsibility and commitment. Therefore, you must attend 80% of the total hours of this class to receive a passing grade. Your instructor will excuse no absences. If you miss more than 20% of the class meetings before the last day for dropping a course, you will receive a grade of W. After the last day to drop, you will receive a WF.

You cannot make up an absence but will be expected to make up any work you miss. When you miss a class, you should check with another student or your instructor to find out about assignments made while you were absent and have them completed by the date they are due.

You should come to class on time and should not ask to leave early. If you are late, you will be counted absent unless you ask your instructor after class to have the absence changed to a tardy. Three tardies will be counted as one absence.

Tardiness is a distraction to students in the class and to the instructor, and is to be avoided. Important procedural information is often given in the first few minutes of class. If a student is not present by the time attendance is taken, he/she will be counted absent. The absence will count in the 20 hours allowed for absence. **Students are responsible for work and information given in class whether they are present or not.** If a student has been late or absent, he/she must find out what has been missed.

Additional Information From the Instructor/Miscellaneous

1. Phones/Pagers/Beepers

Cell phones, beepers, and walkie-talkies cause unnecessary disruption to the teaching/learning process. Out of courtesy to others, all systems of communication should be in quiet position during class.

2. There is to be no eating or drinking in the classroom.

CHM 121 Schedule for Spring Term 2005

January

2	3	4	5	6	7	8
9	10	11 Introduction to the Basic Concepts of Chemistry	12	13	14	15
16	17	18 Measurement Chapter 2	19	20	21	22
23	24	25 Atoms and Atomic Structure Chapter 5	26	27	28	29

February

Jan 30	Jan 31	1 The Periodic Table Chapter 6	2	3	4	5
6	7 V.	8 Chemical Bonding Chapter 7	9	10	11	12
13	14	15 Nomenclature Chapter 8	16	17	18	19
20	21	22 Chemical Calculations Chapter 9 I	23	24	25	26

March

Feb 27	Feb 28	1 Mid-Term Exam Chapters 1, 2, 4, 5, 6, 7 & 8	2	3	4	5
6	7	8 Spring Break	9	10	11	12
13	14	15 Chemical Calculations Chapter 9 II	16	17	18	19
20	21	22 Types of Chemical Reactions	23	24	25	26
27	28	29 Solutions Chapter 13 I	30	31	April 1	April 2

April

3	4	5 Solutions Chapter 13 II	6	7	8	9
10	11	12 Electrochemistry Chapter 15	13	14	15	16
17	18	19 Acid-Base Theory Chapter 14	20	21	22	23
24	25	26 Organic Chemistry	27	28	29	30

May

1	2	3 Final Exam Chapters 9, 13, 14, 15 Types of Reactions Organic Chemistry	4	5	6	7
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CHM 121
Foundations of Chemistry
Competencies

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Subcompetency I

The student will be able to solve problems dealing with the composition of matter.

Task 1

Given the name(symbol) of an element, the student will be able to give the symbol(name) of the element.

Task 2

Given one of the variables, the student will be able to convert between moles, grams and atoms (molecules).

Task 3

Given the percentage composition, the student will be able to determine the empirical formula of a compound.

Task 4

Given the empirical formula and molecular weight, the student will be able to determine the molecular formula of a compound.

Subcompetency II

The student will be able to solve problems dealing with chemical equations.

Task 1

Given a skeleton equation, the student will be able to balance the equation.

Task 2

Given a balanced chemical equation and amount of starting material(s), the student will be able to determine the theoretical yield of the specified product.

Task 3

Given the actual yield and theoretical yield for a chemical reaction, the student will be able to determine the percent yield.

Subcompetency III

The student will be able to solve problems dealing with atomic structure and the periodic table.

Task 1

Given the complete symbol for an element, the student will be able to list the number of protons, electrons and neutrons.

Subcompetency IV

The student will be able to solve problems dealing with the union of atoms.

Task 1

Given the formula of a compound, the student will be able to draw the Lewis electron dot structure for the molecule.

Subcompetency V

The student will be able to solve problems dealing with solutions.

Task 1

Given an amount of solute and solvent, the student will be able to express the concentration of a solution (molarity, molality).

Task 2

Given one of the variables, the student will be able to convert between pH, hydrogen ion concentration and hydroxide ion concentration.

Task 3

Given the pH, hydrogen ion concentration or hydroxide ion concentration, the student will be able to identify the substance as being acidic, basic or neutral.

Subcompetency VI

The student will be able to demonstrate a knowledge of inorganic nomenclature.

Task 1

Given the name (formula) of a compound, the student will be able to give the formula (name) of the compound.

Subcompetency VII

The student will be able to solve problems dealing with oxidation and reduction.

Task 1

Given a compound, the student will be able to assign oxidation numbers to the elements in the compound.

Task 2

Given a chemical equation, the student will be able to identify the substances which are oxidized and reduced, the oxidizing agent and the reducing agent.

Subcompetency VIII

The student will be able to demonstrate a knowledge of organic nomenclature and structure.

Task 1

Given the name (formula) of a compound (alkane, alkene, alkyne, alcohol, aldehyde, ketone, carboxylic acid) the student will be able to give the formula (name) of the compound.

Task 2

Given the name (formula) of an alcohol, the student will be able to identify the alcohol as primary, secondary or tertiary.

July 29, 2004