COURSE PROFICIENCY OUTLINE ADVANCED PLACEMENT

CHEMISTRY -1370 5 Credits

Purpose

Advanced Placement Chemistry is a college level chemistry course taught in a high school setting. The student is expected to have shown excellence in previous courses in chemistry, physics and higher mathematics. The student will be able to receive college advanced placement upon completion of the course and recommendations from the high school, College Entrance Examination Board, and the college. Admission to this course will be in accordance with recommendations by the Commission on Advanced Placement. Students electing the course shall take the Advanced Placement Test.

The course is a continuation and intensification of the work begun in first year chemistry; physical principles of chemistry and mathematical applications will be stressed. Laboratory activities will also be emphasized.

I. Student Outcomes 5.1, 5.2, 5.4, 5.6, 5.7, 5.10

A. Students will demonstrate an understanding of the terminology, facts, concepts, and applications of standard high-level college freshmen chemistry.
B. Students will demonstrate the ability to utilize chemistry learning in complex chemical-mathematics problem-solving situations.
C. Students will demonstrate an understanding of chemistry and technology as related to daily life and the interrelationships of humans, resources, energy and the environment.
D. Students will utilize already attained competencies in science critical-thinking skills, study and learning skills, reading, writing, listening and organizing skills, high level problem-solving skills, and laboratory manipulative and investigative skills, and further these college level learning skills.

II. Content 5.1, 5.2, 5.3, 5.4, 5.6, 5.7, 5.10

A. Chemical Foundations
B. Atoms, Molecules and Ions
C. Stoichiometry
D. Types of Chemical Reactions and Solutions Chemistry
E. Gases
F. Thermochemistry
G. Atomic Structure and Periodicity
H. Bonding: General Concepts
I. Covalent Bonding: Orbitals
J. Liquids and Solids

K. Properties of Solutions
L. Chemical Kinetics
M. Chemical Equilibrium
N. Acids and Bases
O. Applications of Agueous Equilibria
P. Spontaneity, Entropy and Free Energy
Q. Electrochemistry
R. The Representative Elements: Groups 1A-4A
S. The Representative Elements: Groups 5A-8A
T. Transition Metals and Coordination Chemistry
U. The Nucleus: A Chemist's View
V. Organic Chemistry

III. Activities and Materials

A. Text - Zumdahl - Chemistry
B. Classwork
1 Lectures, note-taking, discussions, demonstrations, problem-solving development, formula and equation writing, audio-visual materials and regular tests and quizzes will be utilized.
2 College level skills in reading, writing, listening and note-taking, problem-solving, information processing, reporting and interpreting, and science-learning will be utilized.

C. Laboratory activities - developing an attitude toward safety
1 Use of chemistry laboratory apparatus such as balances, volumetric apparatus, glassware set-ups, and computer assisted experiments.
2 Studies developing quantitative relationships in chemistry, problem-solving skills and quantitative and qualitative concepts.
3 Studies developing scientific skills and science critical-thinking skills.
4 Studies of scientific principles and their applications related to the course content.

D. Assignments - to be checked and reviewed by the teacher and students utilizing freshmen college reading, writing, chemical shorthand, organizational and process thinking skills and problem-solving techniques and skills.
1 Readings - text and other sources, outlining and the organization of information
2 Written answers to questions
3 Formula writing, equation writing and problem-solving practice
4 Laboratory and other reports utilizing various techniques and methods
5 Science study-learning assignments

IV. Evaluation

A. Students will be expected to complete classwork and homework learning assignments, laboratory work and reports, and make up work missed whenever it is practical to do so.

B. Students will be expected to demonstrate a high level of proficiency in all of the goals and objectives of the course within the previously defined content and process areas.

C. The evaluation of student proficiencies shall consist of tests and quizzes, written assignments and reports, lab reports and the teacher's regular observations of the students' proficiencies, involvement and learnings in laboratory activities and in the classroom environment.

D. The final grade represents the teacher's professional judgment of the student's performance and all of the aforementioned activities and/or requirements are included in the evaluative process.

E. The C.E.E.B. Advanced Placement Chemistry exam shall be taken during the month of May.

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