

COURSE OUTLINE

**Developmental Skills Lab 032  
Physical Science IA**

**I. Catalog Statement**

Developmental Skills Lab 032 acquaints students with the basic physical properties of matter, atoms, compounds, and simple chemical equations. This is the first half of a one-year course.

Units — 0.0

Total Laboratory Hours — 100.0

Recommended preparation: ESL 040 or equivalent

Note: This is a self-paced course in an open-entry, open-exit lab environment. Successful completion of this course results in 5 high school credits (1/2 unit).

**II. Course Entry Expectations**

Skills Level Ranges: Reading: 5; Writing: 5; Speaking/Listening: 4; Math: 2.

**III. Course Exit Standards**

Upon successful completion of the required coursework, the student will be able to:

1. list the properties of matter;
2. describe atoms, molecules, elements, and compounds;
3. analyze and use the periodic table of compounds, acids and bases;
4. interpret and write balanced equations;
5. name and explain the four main types of chemical reactions.

**IV. Course Content**

A. Measurement

10 hours

1. Physical science
  - a. chemistry
  - b. physics
2. Scientific measurement
  - a. English system
  - b. Metric system (length, area, volume, and mass)

- B. The Properties of Matter 10 hours
  - 1. Mass versus weight
  - 2. Measuring
    - a. mass of a liquid
    - b. the volume of a liquid
    - c. the volume of solid objects
  - 3. Density
- C. The Structure of Matter 20 hours
  - 1. Molecules and states of matter
  - 2. Elements
  - 3. Compounds
  - 4. Atoms
    - a. models of atoms
    - b. observations
  - 5. Identifying elements
- D. Classifying Elements 20 hours
  - 1. Element symbols
  - 2. The periodic table
    - a. isotopes
    - b. atomic mass
  - 3. Metals, nonmetals and noble gases
    - a. identifying nonmetals
    - b. electricity and metals
- E. Compounds 20 hours
  - 1. Characteristics of compounds
  - 2. How compounds are formed
    - a. arrangement of electrons in an atom
    - b. how atoms combine
  - 3. Chemical formulas
  - 4. How compounds are named
  - 5. Acids and bases
- F. How Matter Changes 20 hours
  - 1. Reactions
    - a. separating a mixture
    - b. dissolving a mixture
  - 2. Showing reactions with chemical equations
    - a. law of conservation of matter
    - b. balancing equations
  - 3. Synthesis and decomposition reactions
  - 4. Single- and double-replacement reactions

V. **Methods of Presentation**

The following instructional methodologies may be used in the course:

- 1. independent study using worksheets and texts;
- 2. computer-aided instruction;

3. small group instruction;
4. video instruction.

**VI. Assignments and Methods of Evaluation**

1. Students must complete an individualized contract.
2. Students complete the work listed on the study guides.
3. Unit exams.

**VII. Textbook(s)**

Marshall, R. and Jacobs. AGS Physical Science, 2001.  
Circle Pines: American Guidance Service, Inc.  
10<sup>th</sup> Grade Textbook Reading Level. ISBN: 0-7854-2271-4

**VIII. Student Learning Outcome**

- identify the metric measurement and convert from U.S. system to metric system;
- list the properties of matter and distinguish between characteristics of atoms and molecules;
- using the periodic table, identify symbols for common elements;
- Distinguish metals, non-metals and gases;
- state how compounds are formed and explain chemical changes.