CAPITAL COMMUNITY-TECHNICAL COLLEGE
COURSE OUTLINE
INTRODUCTION TO PHYSICAL SCIENCE

SECTION I

SUBJECT AREA AND COURSE NUMBER: SCI 101 CREDITS: 3

COURSE TITLE: Introduction to Physical Science

CATALOG COURSE DESCRIPTION:

General survey of basic physical and chemical concepts. Topics include motion, energy, nature, structure and interaction of matter. Applications of societal interest are included.

INSTRUCTIONAL HOURS PER WEEK: 3

PREREQUISITE: Math 080

COURSE OBJECTIVES:

The primary course objectives include the following:

1. To introduce students to the basic concepts in chemistry and physics.

2. To help students appreciate the applications of chemistry and physics in everyday life.

3. To help students develop the ability to solve problems by thinking critically.

SECTION II

1. COURSE CONTENT AND SCOPE:

   A. Outline of the topics to be covered in the course: The topics addressed in this course will include, but are not limited to the following. They will not necessarily be covered in this order.

CAPITAL COMMUNITY-TECHNICAL COLLEGE
COURSE OUTLINE FOR SCI 101
INTRODUCTION TO PHYSICAL SCIENCE

1. Measurements
   a. Units
   b. Metric system

2. The Chemical Elements
   a. Matter
   b. Names and symbols
   c. Periodic table
   d. Naming compounds
   e. Laws of chemistry

3. Chemical bonding
   a. Dalton's Atomic Theory
   b. Modern view of atom
   c. Ionic bonding
   d. Covalent bonding

4. Chemical Reactions
   a. Mole concept
   b. Rate of reactions
   c. Chemical equilibrium
   d. Solutions, acids and bases
   e. Oxidation-reduction

5. Stoichiometry (Optional)

6. Motion
   a. Velocity, acceleration
   b. Newton's laws of motion
   c. Momentum and impulse

7. Work and energy
   a. Work
   b. Conservation of energy

CAPITAL COMMUNITY-TECHNICAL COLLEGE
COURSE OUTLINE FOR SCI 101
INTRODUCTION TO PHYSICAL SCIENCE

A. Outline of topics(continued)

8. Heat and temperature
   a. Temperature and measurement
   b. Specific heat, latent heat
   c. Thermodynamics
   d. Heat transfer

9. Waves
   a. Sound waves
   b. Light waves

10. Electricity and Magnetism
   a. Electric charge
   b. Electricity
   c. Magnetism
   d. Electromagnetism

11. Atomic physics
   a. Bohr's model of atom
   b. Atomic structure and Periodic Table

12. Nuclear physics (optional)

B. Readings:

Reading assignments, usually from the textbook, are a regular feature of the course. These assignments are intended to help prepare the student for presentation and discussion of material in the next lecture(s).

C. Writing Assignments:

None are given.

D. Appropriate Outside Assignments:

Occasional assignments to read a current article are made to familiarize the students with some recent developments or to illustrate possible impacts of these developments on the society.

E. Appropriate Assignments that Demonstrate Critical Thinking:

Problem-solving is an important part of the course and the students analyze the information provided and develop possible approaches to solve the problems.

2. METHODS OF EVALUATION:

Evaluation is based on performance in the tests, quizzes and the final examination.

3. METHODS OF INSTRUCTION:

Methods of instruction include lecture, questions/answers, classroom discussions, use of audiovisual material and occasional in-class demonstrations.

4. REQUIRED TEXTS AND SUPPLIES:

An Introduction to Physical Science by Shipman, Wilson and Todd, Seventh Ed., Heath Publishers.