Syllabus

PHYS1100
Physical Science

2013

Committee Members:

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Facilitator: Dolen Freeouf

Date Reviewed: 1/25/2013

NCCA Council of Instructional Officers

Chair: Terry Blanket

Date Approved: 1-25-13

I. CATALOG DESCRIPTION

PHYS1100
Physical Science

Prerequisite: None

Description: A survey course in the physical sciences with emphasis on scientific processes and problem solving. Areas of study will include selected topics in physics, chemistry, astronomy, geology and meteorology. A scheduled laboratory will supplement classroom activities.

Credit Hours:	4 semester hours or 6 quarter hours
Lecture/classroom Hours:	45 hours
Laboratory Hours:	30 hours

II. COURSE OBJECTIVES/COMPETENCIES

Course will:

A. Develop skills in measuring and converting units within the metric systems
B. Foster critical thinking skills using the scientific method in examining physical science concepts
C. Relate scientific issues to societal and individual problems
D. Relate basic physical science concepts to everyday experiences
E. Explain basic chemical principles
F. Describe the basic structure, features and workings of the solar system and universe
G. Explain basic weather principles
H. Describe the dynamic nature of earth and its cycles

III. STUDENT LEARNING OUTCOMES:

Students will:

From Objective 1

A. Demonstrate knowledge of different types of measurements and units such as CGS and MKS (SI)
B. Demonstrate knowledge of measurements in different systems and co-relate them.

From Objective 2

A. Solve problems relating to Newton's Laws of Motion and Gravitation
B. Evaluate situations involving momentum, energy and their conservation principles.

From Objective 3

A. Demonstrate knowledge of how physical changes affect the environment.
B. Describe available energy resources and how they affect global climate changes

From Objective 4

A. Describe heat flow relative to temperature
B. Demonstrate knowledge of electricity including magnetic fields and various phenomena

From Objective 5

A. Demonstrate knowledge of chemical bonds and the properties of substances
B. Identify the characteristics of elements based on the periodic table

From Objective 6

A. Demonstrate knowledge of uniform circular motion and elliptical motion with regard to the motion of celestial objects
B. Describe the components of the solar system

From Objective 7

A. Demonstrate knowledge of weather fronts and systems.
B. Explain the seasonal changes in weather patterns

From Objective 8

A. Demonstrate knowledge of the basic structures of a dynamic earth
B. Demonstrate knowledge of the components of earth materials

IV. COURSE CONTENT /TOPICAL OUTLINE

(Order of presentation at instructor's discretion)

A. OUTLINE

1. Physics
2. Chemistry
3. Meteorology
4. Geology
5. Astronomy

V. INSTRUCTIONAL MATERIALS

A. **Textbooks**

1. Krauskopf, et.al., *The Physical Universe*, 14th Edition, 2012: McGraw-Hill.
2. Shipman, et.al., *An Introduction to Physical Science*, 13 Ed; 2013; Brooks/Cole
3. Tillery, *Physical Science*, 10th Edition; 2014; McGraw-Hill

B. **Laboratory Manual/Book:**

A. Tillery, Laboratory Manual to accompany Physical Science; McGraw-Hill
B. Garretson, Laboratory Studies in the Physical Sciences; Wm C Brown Publishers
C. Physical Science with Vernier
D. Instructor Generated Lab Manual/Worksheets

C. **Other Resources**

A. Basic laboratory equipment.
B. Online assignments
C. Videos
D. Class demonstrations

D. **Outside reading/research**

See specific course outline
Selected outside readings on current topics

VI. METHOD OF PRESENTATION

Instructors will make use of varied pedagogical techniques including several of the following:

A. Lectures
B. Discussion groups
C. Individual and/or collaborative projects
D. Debates, research, peer response, journals, essays, conferences
E. Computer –assisted instruction, interactive/creative methods, multi-media
F. Field trips

VII. METHODS OF EVALUATION

A. As determined by the instructor, course grades will be based on one or more of the following:
   1. Class and group participation
   2. Daily work, exams, presentations
   3. Projects, papers, and/or a portfolio

B. The instructor will distribute and discuss evaluation and grading policies with students at the beginning/during of each term.