COURSE PROFICIENCY OUTLINE

EARTH-SPACE SCIENCE - 381
Honors 5 Credits

Purpose

Earth-Space Science - 381 is offered for students whose previous achievement and aptitudes indicate major strengths in science, reading, writing and mathematics. Using a systems approach, this course introduces the four branches of Earth Science: Astronomy, Oceanography, Geology and Meteorology, while integrating physical science topics related to Earth Science. Classroom laboratory investigations, collecting, cataloging and interpreting data and drawing conclusions form an important portion of the course work.

I. Student Outcomes 5.1, 5.2, 5.8, 5.9, 5.10,

A. Students will demonstrate an understanding of the terminology, facts, concepts and applications of earth-space learning and materials and of the other sciences as related to the course content.
B. Students will demonstrate the ability to utilize science learning and materials in everyday life and in the further study of science.
C. Students will demonstrate an understanding of science and technology and the interrelationships of humankind, resources, energy and the environment.
D. Students will develop competencies in science critical thinking skills, study and learning skills, reading, report writing, and listening skills, and laboratory manipulative and investigative skills.

E. Students will demonstrate an understanding of and the ability to apply the latest findings in astronomy, meteorology, earth motions and composition.

II. Content 5.1, 5.2, 5.3, 5.4, 5.6, 5.7, 5.8, 5.9, 5.10

A. The dynamic earth and our resources
1. Origin, structure and motion
2. Applied measurement, metrics and density
3. Matter - Atomic structure, compounds, minerals and rocks
4. Renewable and non-renewable resources
5. Alternative energy sources
6. Environmental applications, including our local concerns
7. Map development and interpretation skills
8. Examples of earth topography
9. Earth's history and fossils

B. Surface and subsurface constructional and destructional forces and the earth's surface
1. Weathering, erosion (wind and water) soils and sand
2. The hydrologic cycle, ground water, running water and topography, aquifers and sources of drinking water
3. Glaciers and the ice age, erosion
4. Wind, waves, currents and our shoreline
5. Plate tectonics, continental growth and volcanism
6. Earthquakes and mountains
7. Pollution and solutions

C. Physical forces and our oceans
1. Oceanography, salinity, life in the sea and environmental concerns
2. The ocean floor, sediments, composition
3. Ocean currents

D. Physical forces and the earth's environment in space
1. Tools of the astronomer
2. Principles of light, optics, time, motion, wave motion and communications related to space science
3. Stars, galaxies and our universe
4. Solar system and space exploration
5. The moon and its effect on the earth
6. The earth's revolution and rotation, seasons, time and location
7. Practical applications and environmental factors

E. Physical forces and our atmosphere
1. Tools of the meteorologist
2. Energy relationships
3. Our atmosphere, gases, winds and pressure
4. Evaporation, condensation and precipitation
5. Weather principles and weather maps, storms and forecasting
6. Climate and climatic factors
7. Practical applications and environmental factors

F. Career development and science-related careers and opportunities
1. General principles of career education - attitudes, work habits and competencies.
2. Career information related to all of the sciences, science and engineering and related careers.

III. Activities and Materials

A. Text - Namowitz/Spaulding, Earth Science

B. Classwork
1. Lectures and audio-visual materials, note-taking, discussions, demonstrations, report development, critical thinking activities, and regular tests and quizzes will be utilized.
2. Basic skills such as reading, writing, math, listening, information processing, science learning and integration of technology will be stressed.

C. Laboratory Activities - developing a safety attitude
1. Measurement activities and interpretation of graphic information
2. Studies of basic principles from all of the sciences and their applications to the course content

3. Studies of rocks and minerals - testing, classifying and identifying
4. Studies of maps, map interpretation and topography
5. Studies involving science critical thinking skills
D. Assignments - to be carefully reviewed and checked by the teacher and the students and to include stress on the skills of reading, writing, and science organization and thinking.
1. Readings - text and other sources, outlining and the organization of information
2. Written answers to questions
3. Laboratory and other reports utilizing varying techniques and methods
4. Science study-learning assignments commensurate with the level of instruction expected for this homogeneous group in which the student is placed.

IV. Evaluation

A. Students will bring needed materials to class and be ready to work for the full class period.
B. Students will complete classwork and homework learning assignments, laboratory work and reports on time, and make up missed work as specified by the teacher.
C. Students will demonstrate a level of proficiency commensurate with the homogeneous group expectations for this course. The evaluation of student outcomes shall consist of tests, quizzes, written assignments and reports, lab reports, and the teacher's regular observations of student involvement and achievement in classroom and laboratory activities.

D. Students will take a comprehensive final examination. This exam will count as 20% of the final grade.
E. 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.

Teachers in every discipline will include opportunities wherein students will reinforce writing skills through homework assignments, classwork activities, and special assignments (reports) if required, by writing in complete sentences, using correct spelling and punctuation.

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