GED G070N: GED TEST PREPARATION: SCIENCE

Item	Value
Curriculum Committee Approval Date	11/19/2019
Top Code	493062 - Secondary Education (Grades 9-12) and G.E.D.
Units	0 Total Units
Hours	45 Total Hours (Lecture Hours 45)
Total Outside of Class Hours	0
Course Credit Status	Noncredit (N)
Material Fee	No
Basic Skills	Basic Skills (B)
Repeatable	Yes; Repeat Limit 99
Open Entry/Open Exit	Yes
Grading Policy	P/NP/SP Non-Credit (D)

Course Description

This noncredit course is designed to prepare students to take the science portion of the General Education Development (GED) Test. The course provides pre- and post-testing of science content and individualized prescriptive instruction in preparation for the test. This course provides subject area study in the following proportions: 40% Life Science, 40% Physical Science and 20% Earth and Planetary Sciences. These proportions match the weighting of the number of questions on the GED Science Test. Open Entry/Open Exit. NOT DEGREE APPLICABLE. Not Transferable.

Course Level Student Learning Outcome(s)

1. Course Outcomes
2. Design science experiments.
3. Use numbers and graphs in science.

Course Objectives

- I Analyze scientific and technical arguments and text-based information.
- I. 1. Understand and explain textual scientific presentations.
- I. 2. Express scientific information or findings verbally.
- I. 3. Determine the meaning of symbols, terms and phrases as they are used in scientific presentations.
- I. 4. Reconcile multiple findings, conclusions, or theories.
- II Apply scientific processes and procedural concepts.
- II. 1. Make a prediction based on data or evidence.
- II. 2. Identify possible sources of error and alter the design of an investigation to ameliorate that error.
- II. 3. Understand and apply scientific models, theories and processes.
- II. 4. Design a scientific investigation.
- II. 5. Evaluate whether a conclusion or theory is supported or challenged by particular data or evidence.
- III Reason quantitatively and interpreting data in scientific contexts.
- III. 1. Apply formulas from scientific theories.
- III. 2. Determine the probability of events.
- III. 3. Use counting and permutations to solve scientific problems.

Lecture Content

Life Science Structure of DNA and its function. Functions and major organs of the following body systems and how they interact: Circulatory Lymphatic Digestive Endocrine Integumentary Muscular Nervous Reproductive Respiratory Skeletal Urinary The process of meiosis. The process of mitosis. The process of photosynthesis. The processes of cellular respiration and fermentation. Carrying capacity and events that can lead to the disruption of an ecosystem. The four feeding levels: Producer Primary consumer Secondary consumer Decomposer Energy flow in the following models: Food chain Food web Food pyramid The phases of the oxygen cycle. The phases of the nitrogen cycle. The phases of the carbon cycle. Dominance and the difference between phenotype and genotype. Punnett square and predicting ratios of inherited traits. Understand the principles of natural selection. Earth and Space Solar System: the planets in our solar system and their basic characteristics. Stars: the life cycle of stars. Plate Tectonics: the forces that shift the Earth's crust and the effects of those forces. Earth's Layers: the layers of the Earth (inner core, outer core, mantle, and crust), and lithosphere and asthenosphere. Climate: the process of climate change, Greenhouse Effect, and the effects humans have had on it. Physical Science Atoms: the structure of an atom and how atoms bond together. Chemical Reactions: chemical reactions and balancing chemical equations. Motion: Newton's laws of motion and the functions of simple machines. Heat Transfer: conduction, radiation, and convection. Energy: conservation of energy and types of potential and kinetic energy. Waves: how waves work and the main types of waves: transverse and longitudinal.

Method(s) of Instruction

- Enhanced NC Lect (NC1)
- Online Enhanced NC Lect (NC5)
- Live Online Enhanced NC Lect (NC9)

Instructional Techniques

Method: An assessment test will be given as part of the student orientation to the course. The test is designed to discover weak and strong areas of the student's knowledge of science. Based on the level achieved, an individual study plan will then be developed and discussed with the student. Integration: A student will not be able to advance to a new subject area until they have demonstrated satisfactory performance in their weak areas. Also, students must demonstrate their mastery of each Science subject area before being recommended to take the GED Test.

Reading Assignments

Answer questions about science articles to reinforce understanding of the scientific method as discussed in class. Periodic reading of supplemental materials to become familiar with scientific terms and phrases.

Writing Assignments

Write up the conclusions of science experiments and be able to describe the results to the class. Given a hypothesis, design and summarize the steps needed to prove or disprove the hypothesis.

Out-of-class Assignments

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Demonstration of Critical Thinking

Combine the application of several science concepts to design an experiment to prove a hypothesis. Make a determination about whether a conclusion or theory is supported or challenged by particular evidence.

Required Writing, Problem Solving, Skills Demonstration

Write definitions of Life Science, Earth and Space Science, and Physical Science terms. Demonstrate the ability to communicate the results of an experiment verbally.

Eligible Disciplines

Biological sciences: Master's degree in any biological science OR bachelor's degree in any biological science AND master's degree in biochemistry, biophysics, or marine science OR the equivalent. Master's degree required. Chemistry: Master's degree in chemistry OR bachelor's degree in chemistry or biochemistry AND master's degree in biochemistry, chemical engineering, chemical physics, physics, molecular biology, or geochemistry OR the equivalent. Master's degree required. Earth science: Master's degree in geology, geophysics, earth sciences, meteorology, oceanography, or paleontology OR bachelor's degree in geology AND master's degree in geography, physics, or geochemistry OR the equivalent. Master's degree required. Physics/Astronomy: Master's degree in physics, astronomy, or astrophysics OR bachelor's degree in physics or astronomy AND master's degree in engineering, mathematics, meteorology, or geophysics OR the equivalent. Master's degree required.

Textbooks Resources

1. Required Caren Van slyke. Kaplan GED Test Prep Plus 2019, 2019 ed. New York: Kaplan, 2019

Other Resources

1. Physical science and math lectures and tutorial videos https://www.khanacademy.org/ - (Open Educational Resource) 2. Physical science simulations https://phet.colorado.edu/ - (Open Educational Resource) 3. Physics lectures and tutorial videos http://www.animations.physics.unsw.edu.au/ - (Open Educational Resource) 4. Concepts of Biology https://openstax.org/details/books/biology-2e - (Open Educational Resource) 5. Astronomy https://openstax.org/details/books/astronomy - (Open Educational Resource)