

Course Syllabus

Science, Anatomy

Morgan County Curriculum 4.1 High School, Final
Morgan County School District

Students are assessed in Science through the Commonwealth Assessment Testing System (CATS).

The Kentucky Core Content Test (KCCT) in science is given in grade 11 and consists of 38 Multiple-Choice and five (5) Open Response items. The scientific content standards at the high school level are organized around seven "Big Ideas" that are important to the discipline of science. These big ideas are: Structure and Transformation of Matter, Motion and Forces, The Earth and the Universe, Unity and Diversity, Biological Change, Energy Transformations and Interdependence.

Eleventh grade students will also take the American College Test (ACT). The ACT assesses students' general educational development and their ability to complete college-level work. The Science section of the ACT contains 40 Multiple-Choice questions dealing with the following: The Science Reasoning section has seven passages, each of which is followed by five to seven questions. The passages cover material drawn from biology, chemistry, physics, and the physical sciences (including geology, astronomy, and meteorology). All of the passages fall within three basic formats: Data Representation (38%), Experimental Reasoning (45%), and Conflicting Viewpoints (17%). The questions test one's ability to interpret scientific data and fall into three categories: Understanding, Analysis, Generalization.

Tenth grade students will take the PLAN, a curriculum-based assessment program developed by the American College Testing Program (ACT) to help students plan their academic careers and prepare for entry into college or the world of work. The test consists of 30 Multiple-Choice Questions dealing with biology, chemistry, earth/space science and physics content.

Upon reviewing assessment results, the Morgan County High School will help the student and parent to determine what courses their child needs to take during their high school career, utilizing the Individual Learning Plan (ILP)

Physical Science (25%)

- 1.1.2 (DOK) Supporting
The learner will be able to understand that the atom's nucleus is composed of protons and neutrons that are much more massive than electrons; When an element has atoms that differ in the number of neutrons, these atoms are called different isotopes of the element.
- 1.1.7 (DOK 2) ASSESSED
The learner will be able to construct diagrams to illustrate ionic or covalent bonding; Predict compound formation and bond type as either ionic or covalent (polar, nonpolar). Bonds between atoms are created when outer electrons are paired by being transferred (ionic) or shared (covalent). A compound is formed when two or more kinds of atoms bind together chemically.

Biological Science (25%)

- 3.4.1 (DOK 3) ASSESSED
The learner will be able to explain the role of DNA in protein synthesis. (Cells store and use information to guide their functions. The genetic information stored in DNA directs the synthesis of the thousands of proteins that each cell requires.).
- 3.4.2 (DOK) Supporting
The learner will be able to understand that most cell functions involve chemical reactions. Food molecules taken into cells react the same to provide the chemical constituents needed to synthesize other molecules. Both breakdown and synthesis are made possible by a large set of protein catalysts, called enzymes. The breakdown of some of the food molecules enables the cell to store energy in specific chemicals that are used to carry out the many functions of the cell.
- 3.4.3 (DOK 2) ASSESSED
The learner will be able to describe cell regulation (enzyme function, diffusion, osmosis, homeostasis); Predict consequences of internal/external environmental change on cell function/regulation. (Cell functions are regulated. Regulation occurs both through changes in the activity of the functions performed by proteins and through selective expression of individual genes., This

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regulation allows cells to respond to their internal and external environments and to control and coordinate cell growth and division.

■ 3.4.5 (DOK 3) ASSESSED

The learner will be able to explain the relationship between sexual reproduction (meiosis) and the transmission of genetic information; Draw conclusions/make predictions based on hereditary evidence/data (pedigrees, punnet squares). (Multicellular organisms, including humans, form from cells that contain two copies of each chromosome. This explains many features of heredity. Transmission of genetic information through sexual reproduction to offspring occurs when male and female gametes that contain only one representative from each chromosome pair unite.).

■ 3.4.6 (DOK) Supporting

The learner will be able to understand that in all organisms and viruses, the instructions for specifying the characteristics are carried in nucleic acids. The chemical and structural properties of nucleic acids determine how the genetic information that underlies heredity is both encoded in genes and replicated.

■ 3.4.8 (DOK) Supporting

The learner will be able to understand that multicellular animals have nervous systems that generate behavior. Nerve cells communicate with each other by secreting specific molecules. Specialized cells in sense organs detect light, sound, and specific chemicals enabling animals to monitor what is going on in the world around them.