Syllabus

TEAS Science

Course Overview

TEAS – Test of Essential Academic Skills, Science is a comprehensive introduction to scientific concepts designed to give you a deeper understanding of the world around you. In this course, you will study concepts such as atoms, molecules, cells, and organs in detail. You will learn about the human body and its various organ systems. You will learn about cells and how carbohydrates, lipids, proteins, and nucleic acids function in natural systems. You will also explore genetics and inheritance. In the latter part of this course, you will focus on atoms, molecules, and chemical bonding. You will also learn how chemical reactions take place and understand the difference between acids and bases.

Course Goals

By the end of this course, you will be able to do the following:

- Explain the scientific method and use it to answer scientific questions.
- Explain what cells are and how they function.
- Describe how cells, tissues, organs, and organ systems make up the human body.
- Explain how sensory receptors respond to stimuli.
- Describe how carbohydrates, lipids, proteins, and nucleic acids function in natural systems.
- Explain Mendelian genetics, gene-based inheritance, and chromosomal inheritance.
- Describe the structure of a DNA and explain a gene and its functions in the human body.
- Describe the various human body systems—the muscular system, the skeletal system, the cardiovascular system, the integumentary system, the respiratory system, the nervous system, the lymphatic and immune systems, the endocrine system, the reproductive systems, the digestive system, and the excretory system.
- Describe the parts of an atom.
- Identify and describe ionic, covalent, and metallic bonds.
- Identify and describe acids, bases, and chemical changes.

General Skills

To participate in this course, you should be able to do the following:

- Complete basic operations with word processing software, such as Microsoft Word or Google Docs.
- Understand the basics of spreadsheet software, such as Microsoft Excel or Google Spreadsheets, but having prior computing experience is not necessary.
- Perform online research using various search engines and library databases.
- Communicate through email and participate in discussion boards.

For a complete list of general skills that are required for participation in online courses, refer to the Prerequisites section of the Plato Student Orientation document, found at the beginning of this course.

Credit Value

TEAS Science is a 1.0-credit course.

Course Materials

- Notebook
- Graphing calculator, recommend TI-83 or equivalent
- Computer with Internet connection and speakers or headphones
- Microsoft Word or equivalent
- Microsoft Excel or equivalent

Course Pacing Guide

This course description and pacing guide is intended to help you keep on schedule with your work. Note that your course instructor may modify the schedule to meet the specific needs of your class.

Unit 1: Building Blocks of Life

Summary
This unit focuses on understanding some of the central components of human body. You will start the unit by learning about the scientific method and using it to answer life-science questions. Then, you will learn how cells are the building blocks of all living beings. You will also explore how cells, tissues, organs, and organ systems make up a complex human body. Finally, you will be introduced to sensory receptors and consider how they respond to stimuli by sending messages to the brain.

Day	Activity/*Objective*	Type
1 day: 1	**Syllabus and Plato Student Orientation** *Review the Plato Student Orientation and Course Syllabus at the beginning of this course.*	Course Orientation
2 days: 2–3	**What Is Science?** *Understand the scientific method and how it relates to Earth and space science.*	Tutorial
3 days: 4–6	**Methods of Science** *Use the steps of the scientific method to plan an investigation that answers a life science question.*	Tutorial
2 days: 7–8	**Cells: The Building Blocks of Life** *Use evidence about the characteristics of organisms to explain that all living things are made up of cells.*	Tutorial
3 days: 9–11	**The Parts of a Cell** *Create a model that shows how the parts of a cell contribute to its function.*	Tutorial

Day	Activity/*Objective*	Type
3 days: 12–14	**Tissues, Organs, and Systems** *Use evidence to argue that the human body is made up of tissues, organs, and systems.*	Tutorial
2 days: 15–16	**Sensory Receptors** *Gather and use information to explain that sensory receptors respond to stimuli by sending messages to the brain.*	Tutorial
1 day: 17	**Posttest—Unit 1**	Assessment

Unit 2: Genetics and Inheritance

Summary
This unit focuses on understanding genetics and heredity. You will start by analyzing the function of the four major groups of biological molecules—carbohydrates, lipids, proteins, and nucleic acids. You will then learn about Mendelian genetics, gene-based inheritance, and chromosomal inheritance. At the end of the unit, you will explore the structure and functions of a DNA and consider the gene as the basic unit of inheritance.

Day	Activity / *Objective*	Type
3 days: 18–20	**Carbohydrates, Lipids, Proteins, and Nucleic Acid** *Describe how the four major groups of biological molecules function in natural systems.*	Tutorial
3 days: 21–23	**Mendelian Genetics** *Explain and solve problems involving basic Mendelian genetics.*	Tutorial
2 days: 24–25	**Gene-Based Inheritance** *Explain and solve problems involving gene-based inheritance.*	Tutorial
2 days:	**Chromosomal Inheritance**	Tutorial

26–27	*Describe experiments that led to the discovery of chromosomal inheritance and solve related problems.*	
3 days: 28–30	**Overview of DNA** *Describe DNA's structure and functions, including replication and repair.*	Tutorial
2 days: 31–32	**DNA and Genes** *Explain what a gene is and how it functions.*	Tutorial
1 day: 33	**Posttest—Unit 2**	Assessment

Unit 3: Systems of the Human Body - Part 1

Summary
This unit focuses on some of the important systems in the human body. You will learn about the function of the skeletal system, the muscular system, the cardiovascular system, the integumentary system, the respiratory system, and the nervous system.

Day	**Activity /** *Objective*	Type
2 days: 34–35	**The Skeletal System** *Describe the structure and functions of the skeletal system.*	Tutorial
3 days: 36–38	**The Muscular System** *Examine the structure, functions, and disorders of the muscular system.*	Tutorial
3 days: 39–41	**The Cardiovascular System** *Examine the structure, functions, and disorders of the cardiovascular system.*	Tutorial
3 days: 42–44	**The Integumentary System** *Describe the structure and functions of the integumentary system.*	Tutorial

2 days: 45–46	**The Respiratory System** *Identify the structure, functions, and diseases of the respiratory system.*	Tutorial
3 days: 47–49	**The Nervous System** *Examine how the nervous system is the control and communication center of the body.*	Tutorial
1 day: 50	**Posttest—Unit 3**	Assessment

Unit 4: Systems of the Human Body - Part 2

Summary
This unit focuses on some more complex systems of the human body. In this unit, you will discuss and examine the functions of the lymphatic and immune systems, the endocrine system, the male and female reproductive systems, the digestive system, and the excretory system.

Day	Activity / *Objective*	Type
3 days: 51–53	**The Lymphatic and Immune Systems** *Discuss how the lymphatic and immune systems fight infection and defend the body from disease.*	Tutorial
3 days: 54–56	**The Endocrine System** *Examine the structure, functions, and disorders of the endocrine system.*	Tutorial
3 days: 57–59	**The Male and Female Reproductive Systems** *Describe the structure, functions, and disorders of the male and female reproductive systems.*	Tutorial
3 days: 60–62	**The Digestive System** *Describe the structure of the digestive system and list the major functions.*	Tutorial

3 days: 63–65	**The Excretory System** *Discuss the structure and functions of the excretory system.*	Tutorial
1 day: 66	**Posttest—Unit 4**	Assessment

Unit 5: Acids, Bases, and Chemical Reactions

Summary
This unit focuses on the building blocks of all matter, namely atoms and molecules. You will begin by understanding the difference between a physical and chemical changes in nature. Then, you will learn about the atom and its constituent parts. You will also analyze the different types of chemical bonds that may exist between atoms within a molecule. You will explore how to identify different types of chemical reactions and describe reaction rates. Finally, you will analyze the difference between acids and bases and learn how to calculate pH.

Day	Activity / *Objective*	Type
2 days: 67–68	**Physical Changes Versus Chemical Changes** *Identify physical and chemical properties and changes.*	Tutorial
3 days: 69–71	**Models of the Atom** *Describe the experimental basis for the atom and describe the parts of the atom.*	Tutorial
3 days: 72–74	**Ionic, Covalent, and Metallic Bonds** *Identify ionic, covalent, and metallic substances and describe their bonding.*	Tutorial
2 days: 75–76	**Types of Reactions** *Identify different types of chemical reaction.*	Tutorial
2 days: 77–78	**Reaction Rates** *Describe reaction rates and identify factors that affect them.*	Tutorial

3 days: 79–81	**Activation Energy** *Understand activation energy and describe how catalysts affect it.*	Tutorial
2 days: 82–83	**Properties of Acids and Bases** *Identify properties of acids and bases.*	Tutorial
2 days: 84–85	**Types of Acids and Bases** *Differentiate among the three types of acids and bases.*	Tutorial
2 days: 86–87	**The pH Scale** *Describe the auto ionization of water and calculate pH.*	Tutorial
1 day: 88	**Posttest—Unit 5**	Assessment
1 day: 89	**Semester Review**	
1 day: 90	**End-of-Semester Test**	Assessment