



Program Transfer Goals

- Ask questions, recognize and define problems, and propose solutions.
- Safely and ethically collect, analyze, and evaluate appropriate data.
- Utilize, create, and analyze models to understand the world.
- Make valid claims and informed decisions based on scientific evidence.
- Effectively communicate scientific reasoning to a target audience.

PACING

First Nine Weeks		
Nature of Science 3 weeks	Biochemistry & Nutrition 3 weeks	Cells 1 3 weeks (2 weeks in 1st 9 weeks)

Second Nine Weeks			
Cells 1 3 weeks total (1 week in 2nd 9 weeks)	Cells 2 3 weeks	Cells 3 2 weeks	Genetics 5 weeks total (1 week in 2nd 9 weeks)

Third Nine Weeks			
Genetics 5 weeks total (4 weeks in 3rd 9 weeks)	Evolution 3 weeks	Classification 2 weeks	Viruses & Bacteria 1 weeks

Fourth Nine Weeks	
Plant and Body Systems 4 weeks	Ecology 2 weeks

Assurances for a Guaranteed and Viable Curriculum

Adherence to this scope and sequence affords every member of the learning community clarity on the knowledge and skills on which each learner should demonstrate proficiency. In order to deliver a guaranteed and viable curriculum, our team commits to and ensures the following understandings:

Shared Accountability: Responding to the Needs of All Learners

- High levels of learning for all students.
- The district and course formative assessments aligned to the standards for this course support educators and learners in monitoring academic achievement and leveraging interventions.

Shared Understanding: Curriculum Design

- The district curriculum design weaves together the elements of content, skills and assessments in order to adhere to curriculum design at the macro and micro level, ensuring vertical alignment.
- The district curriculum incorporates standards, scope and sequence, enduring understandings, essential questions, performance assessments, and recommended resources.

Interdependence: Curriculum Units



Members of the learning community utilize the curriculum units, plan collaboratively, and reflect on results for continuous improvement.

The district curriculum units may be found: <http://tinyurl.com/Coppell-Curriculu>

UNIT 1: [NATURE OF SCIENCE]

TIMELINE: 3 WEEKS - GRADING PERIOD 1 (AUGUST 21 - SEPTEMBER 8)

Unit Summary: High impact introductory unit on the nature of modern science. Helping the learners become scientifically literate through the use of experiments (with safety in mind), data tables, graphs, and figures. Learning to convey conclusions based on observations and understanding the modern world.

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Students will know...

- Scientific Processes – how to use, understand, manipulate in various circumstances
- Types of investigations
- Safe practices and techniques

Students will be skilled at...

- Conduct scientific investigations safely.
- Collect data quantitatively and qualitatively using appropriate tools.
- Analyze, evaluate, make inferences, and predict trends from data.
- Communicate valid conclusions supported by evidence.

UNIT 2: [BIOCHEMISTRY & NUTRITION]

TIMELINE: 3 WEEKS - GRADING PERIOD 1 (SEPTEMBER 11 - SEPTEMBER 29)

Unit Summary: Provide students with a broad introduction to metabolic and nutritional aspects of Biochemistry. Major topics include: Structure and function of proteins, carbohydrates, lipids, and nucleic acids.

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Students will know...

- The structures and functions of Biomolecules including carbohydrates, lipids, proteins, and nucleic acids
- The role of enzymes



Students will be skilled at...

- Compare the structures and functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids.
- Recognizing that nutrition plays an important role in the development of the human body.
- Identify and investigate the role of enzymes.

UNIT 3: [CELLS 1]

TIMELINE: 3 WEEKS - GRADING PERIOD 1 & 2 (OCTOBER 2ND - OCTOBER 20)

Unit Summary: An overview of the basic components of living cells, including the differences between plant and animal cells, prokaryotic and eukaryotic cells, and the beginning of cell processes including DNA replication, cell cycle, and mitosis.

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Students will know...

- The student knows that cells are the basic structures of all living things with specialized parts that perform specific functions and that viruses are different from cells.
- The student knows how an organism grows and the importance of cell differentiation.

Students will be skilled at...

- Compare and contrast prokaryotic and eukaryotic cells.
- Compare and contrast animal and plant cells
- Describe the stages of the cell cycle, including deoxyribonucleic acid (DNA) replication and mitosis, and the importance of the cell cycle to the growth of organisms.
- Describe the roles of DNA, ribonucleic acid (RNA), and environmental factors in cell differentiation.
- Recognize that disruptions of the cell cycle lead to diseases such as cancer.

UNIT 4: [CELLS 2]

TIMELINE: 3 WEEKS - GRADING PERIOD 2 (OCTOBER 23 - NOVEMBER 10)

Unit Summary: An overview of the basic components of living cells and their processes, including cell transport, protein synthesis, and gene expression.

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Students will know...

- The student knows that cells are the basic structures of all living things with specialized parts that perform specific functions.
- The different types of transport, including active and passive transport.

Students will be skilled at...

- Investigate and explain cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules.
- Explain the purpose and process of transcription and translation using models of DNA and RNA.
- Recognize that gene expression is a regulated process.
- Identify and illustrate changes in DNA and evaluate the significance of these changes.

UNIT 5: [CELLS 3]

TIMELINE: 2 WEEKS - GRADING PERIOD 2 (NOVEMBER 13 - DECEMBER 1)

Unit Summary: An overview of the basic components of living cells and their processes, including cellular respiration and photosynthesis.

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Students will know...

- Cells are the basic structure of all living things with specialized parts that perform specific functions.
- Various molecules are involved in metabolic processes and energy conversions that occur in living organisms.

Students will be skilled at...

- Investigate and explain cellular processes, including homeostasis, energy conversions, and synthesis of new molecules.
- Compare the reactants and products of photosynthesis and cellular respiration in terms of energy and matter.

UNIT 6: [GENETICS]

TIMELINE: 5 WEEKS - GRADING PERIOD 2 & 3 (DECEMBER 4 - JANUARY 26)

Unit Summary: Introduction to heredity, including how sexual reproduction plays a role in the inheritance of traits (meiosis), gene technologies, Mendelian and non-Mendelian inheritance, and mutations.



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Students will know...

- The mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics.

Students will be skilled at...

- Identify components of DNA, and describe how information for specifying the traits of an organism is carried in the DNA.
- Recognize that components that make up the genetic code are common to all organisms.
- Predict possible outcomes of various genetic combinations such as monohybrid crosses, dihybrid crosses, and non-Mendelian inheritance.
- Recognize the significance of meiosis to sexual reproduction.
- Describe how techniques such as DNA fingerprinting, genetic modifications, and chromosomal analysis are used to study the genomes of organisms.

UNIT 7: [EVOLUTION]

TIMELINE: 3 WEEKS - GRADING PERIOD 3 (JANUARY 29 - FEBRUARY 16)

Unit Summary: How the theory of evolution was formed through the contributions of scientists, evidences of evolution (fossil record, biogeography, comparative anatomy, embryology, DNA) and the mechanisms of evolution (natural selection, gene flow, and genetic drift).

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Students will know...

- Evolutionary theory is a scientific explanation for the unity and diversity of life.
- Taxonomy is a branching classification based on the shared characteristics of organisms and can change as new discoveries are made.

Students will be skilled at...

- Analyze and evaluate how evidence of common ancestry among groups is provided by the fossil record, biogeography, and homologies, including anatomical, molecular, and developmental.
- Analyze and evaluate scientific explanations concerning any data of sudden appearance, stasis, and sequential nature of groups in the fossil record.
- Analyze and evaluate how natural selection produces change in populations, not individuals.



- Analyze and evaluate how the elements of natural selection, including inherited variation, the potential of a population to produce more offspring than can survive, and a finite supply of environmental resources, result in differential reproductive success.
- Analyze and evaluate the relationship of natural selection to adaptation and to the development and diversity of species.
- Analyze and evaluate the effects of other evolutionary mechanisms, including genetic drift, gene flow, mutation, and recombination.
- Analyze and evaluate scientific explanations concerning the complexity of the cell.

UNIT 8: [CLASSIFICATION]

TIMELINE: 2 WEEKS - GRADING PERIOD 3 (FEBRUARY 19 - MARCH 2)

Unit Summary: The importance of having a universal naming system and taxonomic classification system for all organisms.

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Students will know...

- Taxonomy is a branching classification based on the shared characteristics of organisms and can change as new discoveries are made.

Students will be skilled at...

- Define taxonomy and recognize the importance of a standardized taxonomic system to the scientific community.
- Categorize organisms using a hierarchical classification system based on similarities and differences shared among groups.
- Compare characteristics of taxonomic groups, including archaea, bacteria, protists, fungi, plants, and animals.

UNIT 9: [BACTERIA & VIRUSES]

TIMELINE: 1 WEEK - GRADING PERIOD 3 (MARCH 5 - MARCH 9)

Unit Summary: The understanding of microorganisms and their structure, function, replication/reproduction, and their impact (commercially and on human health).

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Students will know...

- Cells are the basic structure of all living things with specialized parts that perform functions and that viruses are different from cells.
- Biological systems work to achieve and maintain balance.

Students will be skilled at...

- Compare and contrast viruses and bacteria (prokaryotic cells).
- Compare the structures of viruses to cells, describe viral reproduction, and describe the role of viruses in causing diseases such as human immunodeficiency virus (HIV) and influenza.
- Summarize the role of microorganisms in both maintaining and disrupting the health of organisms.

UNIT 10: [PLANT & BODY SYSTEMS]

TIMELINE: 4 WEEKS - GRADING PERIOD 4 (MARCH 19 - APRIL 13)

Unit Summary: Interrelationship between the 11 body systems including their structure, function, and components. Structure, function, and components of plants, including the 3 body systems (response, transport/vascular, and reproductive).

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Students will know...

- Biological systems are composed of multiple levels.
- Biological Systems work together to achieve and maintain balance.
- How an organism grows and the importance of cell differentiation.

Students will be skilled at...

- Describe the interactions that occur among systems that perform the functions of regulation, nutrient absorption, reproduction, and defense from injury or illness in animals.
- Describe the interactions that occur among systems and relate the levels to each other and to the whole system.
- Analyze the levels of organization in biological systems and relate the levels to each other and to the whole system.
- Describe the role of internal feedback mechanisms in the maintenance of homeostasis.
- Investigate and analyze how organisms respond to external factors.
- Summarize the role of microorganisms in both maintaining and disrupting health of both organisms and ecosystems.



- Examine specialized cells, including roots, stems, and leaves of plants; and animal cells such as blood, muscle, and epithelium.

UNIT 11: [ECOLOGY]

TIMELINE: 2 WEEKS - GRADING PERIOD 4 (APRIL 16 - APRIL 27)

Unit Summary: Interdependence within environmental systems, including symbiotic relationships, ecological succession, adaptations, energy flow, and sustainability.

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Students will know...

- Biological systems work to achieve and maintain balance.
- Interdependence and interactions occur within an environmental system.

Students will be skilled at...

- Describe the role of internal feedback mechanisms in the maintenance of homeostasis.
- Investigate and analyze how organisms, population, and communities respond to external factors.
- Summarize the role of microorganisms in both maintaining and disrupting the health of both organisms and ecosystems.
- Describe how events and processes that occur during ecological succession can change populations and species diversity.
- Interpret relationships, including predation, parasitism, commensalism, mutualism, and competition among organisms.
- Compare variations and adaptations of organisms in different ecosystems.
- Analyze the flow of matter and energy through trophic levels using various models.