Inquiry Investigations™
Genetics and Inheritance MODULE – 1282831
Grades: 7-10

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Alabama Courses of Study
Science
Grade 7

STANDARD	AL.1.	Life Science - Students will:
OBJECTIVE	1.1.	Describe characteristics common to living things, including growth and development, reproduction, cellular organization, use of energy, exchange of gases, and response to the environment. • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	1.2.	Identify functions of organelles found in eukaryotic cells, including the nucleus, cell membrane, cell wall, mitochondria, chloroplasts, and vacuoles. Example: mitochondria releasing energy for use in cellular respiration • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
OBJECTIVE	1.2.a.	Additional Minimum Content: Identifying components of the cell theory • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
OBJECTIVE	1.2.b.	Additional Minimum Content: Identifying cells as prokaryotic or eukaryotic • Teacher Resource CD: The DNA Connection
OBJECTIVE	1.2.c.	Additional Minimum Content: Listing the sequence of the mitotic cell cycle • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
OBJECTIVE	1.3.	Relate major tissues and organs of the skeletal, circulatory, reproductive, muscular, respiratory, nervous, and digestive systems to their functions. • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood
OBJECTIVE	1.3.a.	Additional Minimum Content: Arranging in order the organizational levels of the human body from the cell through organ systems • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human

		Variation in Blood
OBJECTIVE	**1.5.**	Identify major differences between plants and animals, including internal structures, external structures, methods of locomotion, methods of reproduction, and stages of development. • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**1.7.a.**	Additional Minimum Content: Classifying organisms as autotrophs or heterotrophs • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**1.8.**	Describe the function of chromosomes. • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection
OBJECTIVE	**1.8.a.**	Additional Minimum Content: Identifying genes as parts of chromosomes that carry genetic traits • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection
OBJECTIVE	**1.10.**	Identify differences between deoxyribonucleic acid (DNA) and ribonucleic acid (RNA). Examples: DNA - double helix, contains thymine; RNA - single stranded, contains uracil

		• Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: The DNA Connection
OBJECTIVE	**1.10.a.**	Additional Minimum Content: Identifying Watson and Crick as scientists who discovered the shape of the DNA molecule • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: The DNA Connection
OBJECTIVE	**1.11.**	Identify Mendel's laws of genetics. • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: The DNA Connection • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**1.11.a.**	Additional Minimum Content: Recognizing Down's syndrome and sickle cell anemia as inherited genetic disorders • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Teacher Resource CD: Genetics and Heredity

OBJECTIVE	1.11.b.	Additional Minimum Content: Using a monohybrid Punnett square to predict the probability of traits passed from parents to offspring • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment

Alabama Courses of Study
Science
Grade 8

STANDARD	AL.1.	Physical Science - Students will:
OBJECTIVE	1.1.e.	Additional Minimum Content: Identifying appropriate laboratory glassware, balances, time measuring equipment, and optical instruments used to conduct an investigation • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome

		• Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment

Alabama Courses of Study
Science
Grade 9

STANDARD	AL.2.	Biology Core - Students will:
OBJECTIVE	2.1.	Select appropriate laboratory glassware, balances, time measuring equipment, and optical instruments to conduct an experiment. • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance

		• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**2.1.c.**	Additional Minimum Content: Identifying safe laboratory procedures when handling chemicals and using Bunsen burners and laboratory glassware • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**2.2.a.**	Additional Minimum Content: Identifying functions of carbohydrates, lipids, proteins, and nucleic acids in cellular activities • Teacher Resource CD: The DNA Connection
OBJECTIVE	**2.4.a.**	Additional Minimum Content: Identifying scientists who contributed to the cell theory. Examples: Hooke, Schleiden, Schwann, Virchow, van Leeuwenhoek • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and

		Fertilization
OBJECTIVE	**2.4.b.**	Additional Minimum Content: Distinguishing between prokaryotic and eukaryotic cells • Teacher Resource CD: The DNA Connection
OBJECTIVE	**2.6.**	Describe the roles of mitotic and meiotic divisions during reproduction, growth, and repair of cells. • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
OBJECTIVE	**2.6.a.**	Additional Minimum Content: Comparing sperm and egg formation in terms of ploidy. Example: ploidy - haploid, diploid • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
OBJECTIVE	**2.7.**	Apply Mendel's law to determine phenotypic and genotypic probabilities of offspring. • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**2.7.a.**	Additional Minimum Content: Defining important genetic terms, including dihybrid cross, monohybrid cross, phenotype, genotype, homozygous, heterozygous, dominant trait, recessive trait, incomplete dominance, codominance, and allele • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross

		to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**2.7.b.**	Additional Minimum Content: Interpreting inheritance patterns shown in graphs and charts • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**2.7.c.**	Additional Minimum Content: Calculating genotypic and phenotypic percentages and ratios using a Punnett square • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance

		• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**2.8.**	Identify the structure and function of DNA, RNA, and protein. • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: The DNA Connection
OBJECTIVE	**2.8.a.**	Additional Minimum Content: Explaining relationships among DNA, genes, and chromosomes • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to

		Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection
OBJECTIVE	**2.8.b.**	Additional Minimum Content: Listing significant contributions of biotechnology to society, including agricultural and medical practices. Examples: DNA fingerprinting, insulin, growth hormone • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection
OBJECTIVE	**2.8.c.**	Additional Minimum Content: Relating normal patterns of genetic inheritance to genetic variation. Example: crossing-over • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	**2.8.d.**	Additional Minimum Content: Relating ways chance, mutagens, and genetic engineering increase diversity. Examples: insertion, deletion, translocation, inversion, recombinant DNA • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle

		• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	**2.8.e.**	Additional Minimum Content: Relating genetic disorders and disease to patterns of genetic inheritance. Examples: hemophilia, sickle cell anemia, Down's syndrome, Tay-Sachs disease, cystic fibrosis, color blindness, phenylketonuria (PKU) • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Teacher Resource CD: Genetics and Heredity
OBJECTIVE	**2.13.b.**	Additional Minimum Content: Contrasting autotrophs and heterotrophs • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STANDARD	**AL.6.**	**Botany Elective Core - Students will:**
OBJECTIVE	**6.3.b.**	Additional Minimum Content: Comparing characteristics of algae and plants • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**6.6.**	Explain the importance of soil type, texture, and nutrients to plant growth. • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**6.7.**	Explain plant cell processes, including light dependent and light independent reactions of photosynthesis, glycolysis, aerobic and anaerobic respiration, and transport. • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**6.10.a.**	Additional Minimum Content: Describing seed germination, development, and dispersal • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**6.11.**	Describe various natural and artificial methods of vegetative propagation. Examples:

		natural - stem runners, rhizomes, bulbs, tubers; artificial - cutting, grafting, layering • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STANDARD	**AL.9.**	**Forensic Science Elective Core - Students will:**
OBJECTIVE	**9.1.**	Describe responsibilities of various personnel involved in crime scene investigations. Examples: police, detectives, laboratory specialists, medical examiners • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.1.a.**	Additional Minimum Content: Explaining how to search, sketch, and record data from a crime scene • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.2.**	Explain ways to collect and preserve evidence from a crime scene. • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.2.a.**	Additional Minimum Content: Distinguishing between physical evidence and witness evidence • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.2.b.**	Additional Minimum Content: Comparing the three main pattern types that combine to form an individual's unique fingerprint • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.2.c.**	Additional Minimum Content: Explaining different methods of latent fingerprint development • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.2.d.**	Additional Minimum Content: Identifying origins of impressions, including footwear and tire treads • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.2.e.**	Additional Minimum Content: Describing ways to identify hair, fiber, and blood evidence • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.3.**	Distinguish between class and individual characteristics of firearms. Examples: toolmark, caliber, scatter pattern • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.4.**	Describe presumptive and confirmatory tests. Examples: blood type comparison, DNA

		testing • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	**9.5.**	Describe the importance of genetic information to forensics. • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.5.a.**	Additional Minimum Content: Using the process of gel electrophoresis to identify patterns in DNA • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.6.**	Describe the decomposition process. • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.6.a.**	Additional Minimum Content: Using rigor mortis to determine corpse position • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.6.b.**	Additional Minimum Content: Identifying decomposition by-products to determine cause of death • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.6.c.**	Additional Minimum Content: Using entomological life cycles to determine time of death • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.7.**	Identify the importance of skeletal remains in forensics. • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.7.a.**	Additional Minimum Content: Comparing bones and skulls based on age, sex, and race • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.9.**	Use laws of physics to explain forensic evidence. • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery

OBJECTIVE	**9.9.b.**	Additional Minimum Content: Tracking trajectories of collected evidence • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.10.**	Describe techniques used to determine the validity of documents. Examples: fiber and handwriting analyses, ink chromatography • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
STANDARD	**AL.10.**	**Genetic Elective Core - Students will:**
OBJECTIVE	**10.1.**	Explain how the Hardy-Weinberg principle provides a baseline for recognizing evolutionary changes in gene frequency due to genetic drift, gene flow, nonrandom mating, mutation, and natural selection. • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	**10.2.**	Describe factors such as radiation, chemicals, and chance that cause mutations in populations. • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	**10.2.a.**	Additional Minimum Content: Describing effects of genetic variability on adaptations • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	**10.3.**	Describe the significance of Mendel's work to the development of the modern science of genetics, including the laws of segregation and independent assortment. • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: The DNA Connection • Virtual Laboratory: Mendelian Genetics Law of Dominance

		• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**10.4.**	Describe the process of meiosis and the cell cycle, including the hereditary significance of each. • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
OBJECTIVE	**10.4.a.**	Additional Minimum Content: Comparing spermatogenesis and oogenesis using charts • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
OBJECTIVE	**10.5.**	Describe inheritance patterns based on gene interactions. • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**10.5.a.**	Additional Minimum Content: Predicting patterns of heredity using pedigree analysis • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle

		• Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	**10.5.b.**	Additional Minimum Content: Identifying incomplete dominance, codominance, and multiple allelism • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**10.6.**	Describe occurrences and effects of sex linkage, autosomal linkage, crossover, multiple alleles, and polygenes. • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the

		Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**10.7.**	Describe the structure and function of DNA, including replication, translation, and transcription. • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: The DNA Connection
OBJECTIVE	**10.7.a.**	Additional Minimum Content: Applying the genetic code to predict amino acid sequence • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: The DNA Connection
OBJECTIVE	**10.7.b.**	Additional Minimum Content: Describing methods cells use to regulate gene expression • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross

		to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**10.7.c.**	Additional Minimum Content: Defining the role of RNA in protein synthesis • Teacher Resource CD: The DNA Connection
OBJECTIVE	**10.8.**	Explain the structure of eukaryotic chromosomes, including transposons, introns, and exons. • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection
OBJECTIVE	**10.9.**	Differentiate among major areas in modern biotechnology, including plant, animal, microbial, forensic, and marine. Examples: hybridization, cloning, insulin production, DNA profiling, bioremediation • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins

		through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection
OBJECTIVE	**10.10.**	Explain the development and purpose of the Human Genome Project. • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	**10.10.a.**	Additional Minimum Content: Analyzing results of the Human Genome Project to predict ethical, social, and legal implications • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	**10.10.b.**	Additional Minimum Content: Describing medical uses of gene therapy, including vaccines and tissue and antibody engineering • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity
STANDARD	**AL.12.**	**Human Anatomy and Physiology Elective Core - Students will:**
OBJECTIVE	**12.9.**	Identify structures and functions of the cardiovascular system. • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human

		Variation in Blood
OBJECTIVE	**12.9.a.**	Additional Minimum Content: Tracing the flow of blood through the body • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood
OBJECTIVE	**12.9.b.**	Additional Minimum Content: Identifying components of blood • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	**12.9.c.**	Additional Minimum Content: Describing blood cell formation • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	**12.9.d.**	Additional Minimum Content: Distinguishing among human blood groups • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	**12.9.e.**	Additional Minimum Content: Describing common cardiovascular diseases and disorders. Examples: myocardial infarction, mitral valve prolapse, varicose veins, arteriosclerosis • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood
OBJECTIVE	**12.12.c.**	Additional Minimum Content: Identifying disorders of the reproductive system. Examples: endometriosis, sexually transmitted diseases, prostate cancer • Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	**12.15.c.**	Additional Minimum Content: Recognizing disorders and diseases of the immune system. Examples: acquired immunodeficiency syndrome (AIDS), acute lymphocytic leukemia • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Teacher Resource CD: Genetics and Inheritance
STANDARD	**AL.14.**	**Zoology Elective Core - Students will:**
OBJECTIVE	**14.7.**	Explain how species adapt to changing environments to enhance survival and reproductive success, including changes in structure, behavior, or physiology. Examples: aestivation, thicker fur, diurnal activity • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance

		• Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood

Alabama Courses of Study
Science
Grade 10

STANDARD	**AL.2.**	**Biology Core - Students will:**
OBJECTIVE	**2.1.**	Select appropriate laboratory glassware, balances, time measuring equipment, and optical instruments to conduct an experiment. • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting

		• Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**2.1.c.**	Additional Minimum Content: Identifying safe laboratory procedures when handling chemicals and using Bunsen burners and laboratory glassware • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population

		• Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**2.2.a.**	Additional Minimum Content: Identifying functions of carbohydrates, lipids, proteins, and nucleic acids in cellular activities • Teacher Resource CD: The DNA Connection
OBJECTIVE	**2.4.a.**	Additional Minimum Content: Identifying scientists who contributed to the cell theory. Examples: Hooke, Schleiden, Schwann, Virchow, van Leeuwenhoek • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
OBJECTIVE	**2.4.b.**	Additional Minimum Content: Distinguishing between prokaryotic and eukaryotic cells • Teacher Resource CD: The DNA Connection
OBJECTIVE	**2.6.**	Describe the roles of mitotic and meiotic divisions during reproduction, growth, and repair of cells. • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
OBJECTIVE	**2.6.a.**	Additional Minimum Content: Comparing sperm and egg formation in terms of ploidy. Example: ploidy - haploid, diploid • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
OBJECTIVE	**2.7.**	Apply Mendel's law to determine phenotypic and genotypic probabilities of offspring. • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Virtual Laboratory: Mendelian Genetics Law of Dominance

		• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**2.7.a.**	Additional Minimum Content: Defining important genetic terms, including dihybrid cross, monohybrid cross, phenotype, genotype, homozygous, heterozygous, dominant trait, recessive trait, incomplete dominance, codominance, and allele • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**2.7.b.**	Additional Minimum Content: Interpreting inheritance patterns shown in graphs and charts • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human

		Variation in Blood • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**2.7.c.**	Additional Minimum Content: Calculating genotypic and phenotypic percentages and ratios using a Punnett square • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**2.8.**	Identify the structure and function of DNA, RNA, and protein. • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: The DNA Connection
OBJECTIVE	**2.8.a.**	Additional Minimum Content: Explaining relationships among DNA, genes, and chromosomes • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs

		• Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection
OBJECTIVE	**2.8.b.**	Additional Minimum Content: Listing significant contributions of biotechnology to society, including agricultural and medical practices. Examples: DNA fingerprinting, insulin, growth hormone • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection
OBJECTIVE	**2.8.c.**	Additional Minimum Content: Relating normal patterns of genetic inheritance to genetic variation. Example: crossing-over • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease

		• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	**2.8.d.**	Additional Minimum Content: Relating ways chance, mutagens, and genetic engineering increase diversity. Examples: insertion, deletion, translocation, inversion, recombinant DNA • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	**2.8.e.**	Additional Minimum Content: Relating genetic disorders and disease to patterns of genetic inheritance. Examples: hemophilia, sickle cell anemia, Down's syndrome, Tay-Sachs disease, cystic fibrosis, color blindness, phenylketonuria (PKU) • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Teacher Resource CD: Genetics and Heredity
OBJECTIVE	**2.13.b.**	Additional Minimum Content: Contrasting autotrophs and heterotrophs • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STANDARD	**AL.6.**	**Botany Elective Core - Students will:**
OBJECTIVE	**6.3.b.**	Additional Minimum Content: Comparing characteristics of algae and plants • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**6.6.**	Explain the importance of soil type, texture, and nutrients to plant growth. • Virtual Laboratory: Mendelian Genetics Law of Dominance

		• Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**6.7.**	Explain plant cell processes, including light dependent and light independent reactions of photosynthesis, glycolysis, aerobic and anaerobic respiration, and transport. • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**6.10.a.**	Additional Minimum Content: Describing seed germination, development, and dispersal • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**6.11.**	Describe various natural and artificial methods of vegetative propagation. Examples: natural - stem runners, rhizomes, bulbs, tubers; artificial - cutting, grafting, layering • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STANDARD	**AL.9.**	**Forensic Science Elective Core - Students will:**
OBJECTIVE	**9.1.**	Describe responsibilities of various personnel involved in crime scene investigations. Examples: police, detectives, laboratory specialists, medical examiners • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.1.a.**	Additional Minimum Content: Explaining how to search, sketch, and record data from a crime scene • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.2.**	Explain ways to collect and preserve evidence from a crime scene. • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.2.a.**	Additional Minimum Content: Distinguishing between physical evidence and witness evidence • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.2.b.**	Additional Minimum Content: Comparing the three main pattern types that combine to form an individual's unique fingerprint • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.2.c.**	Additional Minimum Content: Explaining different methods of latent fingerprint development • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.2.d.**	Additional Minimum Content: Identifying origins of impressions, including footwear and

		tire treads • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.2.e.**	Additional Minimum Content: Describing ways to identify hair, fiber, and blood evidence • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.3.**	Distinguish between class and individual characteristics of firearms. Examples: toolmark, caliber, scatter pattern • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.4.**	Describe presumptive and confirmatory tests. Examples: blood type comparison, DNA testing • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	**9.5.**	Describe the importance of genetic information to forensics. • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.5.a.**	Additional Minimum Content: Using the process of gel electrophoresis to identify patterns in DNA • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.6.**	Describe the decomposition process. • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.6.a.**	Additional Minimum Content: Using rigor mortis to determine corpse position • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.6.b.**	Additional Minimum Content: Identifying decomposition by-products to determine cause of death • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.6.c.**	Additional Minimum Content: Using entomological life cycles to determine time of death

		• Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.7.**	Identify the importance of skeletal remains in forensics. • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.7.a.**	Additional Minimum Content: Comparing bones and skulls based on age, sex, and race • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.9.**	Use laws of physics to explain forensic evidence. • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.9.b.**	Additional Minimum Content: Tracking trajectories of collected evidence • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
OBJECTIVE	**9.10.**	Describe techniques used to determine the validity of documents. Examples: fiber and handwriting analyses, ink chromatography • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
STANDARD	**AL.10.**	**Genetic Elective Core - Students will:**
OBJECTIVE	**10.1.**	Explain how the Hardy-Weinberg principle provides a baseline for recognizing evolutionary changes in gene frequency due to genetic drift, gene flow, nonrandom mating, mutation, and natural selection. • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	**10.2.**	Describe factors such as radiation, chemicals, and chance that cause mutations in populations. • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	**10.2.a.**	Additional Minimum Content: Describing effects of genetic variability on adaptations • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease

		• Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	**10.3.**	Describe the significance of Mendel's work to the development of the modern science of genetics, including the laws of segregation and independent assortment. • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: The DNA Connection • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**10.4.**	Describe the process of meiosis and the cell cycle, including the hereditary significance of each. • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
OBJECTIVE	**10.4.a.**	Additional Minimum Content: Comparing spermatogenesis and oogenesis using charts • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
OBJECTIVE	**10.5.**	Describe inheritance patterns based on gene interactions. • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic

		Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**10.5.a.**	Additional Minimum Content: Predicting patterns of heredity using pedigree analysis • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	**10.5.b.**	Additional Minimum Content: Identifying incomplete dominance, codominance, and multiple allelism • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**10.6.**	Describe occurrences and effects of sex linkage, autosomal linkage, crossover, multiple alleles, and polygenes.

		• Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**10.7.**	Describe the structure and function of DNA, including replication, translation, and transcription. • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: The DNA Connection
OBJECTIVE	**10.7.a.**	Additional Minimum Content: Applying the genetic code to predict amino acid sequence • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure

		- the Double Helix • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: The DNA Connection
OBJECTIVE	**10.7.b.**	Additional Minimum Content: Describing methods cells use to regulate gene expression • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
OBJECTIVE	**10.7.c.**	Additional Minimum Content: Defining the role of RNA in protein synthesis • Teacher Resource CD: The DNA Connection
OBJECTIVE	**10.8.**	Explain the structure of eukaryotic chromosomes, including transposons, introns, and exons. • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization

		• Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection
OBJECTIVE	**10.9.**	Differentiate among major areas in modern biotechnology, including plant, animal, microbial, forensic, and marine. Examples: hybridization, cloning, insulin production, DNA profiling, bioremediation • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection
OBJECTIVE	**10.10.**	Explain the development and purpose of the Human Genome Project. • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	**10.10.a.**	Additional Minimum Content: Analyzing results of the Human Genome Project to predict ethical, social, and legal implications • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Teacher Resource CD: Genetics and Heredity

		• Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	10.10.b.	Additional Minimum Content: Describing medical uses of gene therapy, including vaccines and tissue and antibody engineering • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity
STANDARD	**AL.12.**	**Human Anatomy and Physiology Elective Core - Students will:**
OBJECTIVE	12.9.	Identify structures and functions of the cardiovascular system. • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood
OBJECTIVE	12.9.a.	Additional Minimum Content: Tracing the flow of blood through the body • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood
OBJECTIVE	12.9.b.	Additional Minimum Content: Identifying components of blood • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	12.9.c.	Additional Minimum Content: Describing blood cell formation • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	12.9.d.	Additional Minimum Content: Distinguishing among human blood groups • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	12.9.e.	Additional Minimum Content: Describing common cardiovascular diseases and disorders. Examples: myocardial infarction, mitral valve prolapse, varicose veins, arteriosclerosis • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood
OBJECTIVE	12.12.c.	Additional Minimum Content: Identifying disorders of the reproductive system. Examples: endometriosis, sexually transmitted diseases, prostate cancer

		• Teacher Resource CD: Genetics and Inheritance
OBJECTIVE	12.15.c.	Additional Minimum Content: Recognizing disorders and diseases of the immune system. Examples: acquired immunodeficiency syndrome (AIDS), acute lymphocytic leukemia • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Teacher Resource CD: Genetics and Inheritance
STANDARD	**AL.14.**	**Zoology Elective Core - Students will:**
OBJECTIVE	14.7.	Explain how species adapt to changing environments to enhance survival and reproductive success, including changes in structure, behavior, or physiology. Examples: aestivation, thicker fur, diurnal activity • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood