

Futures High school
Curriculum map for Science Department (Biology 10 grade)

	Content	Essential Standards	Assessments
January	<p>Explain reduction chromosomes number during meiosis. .Stages of meiosis .Explain the significance of Mendel’s work Law of segregation and law of independent assortment .Predict the possible offspring with Punnett square</p> <p style="text-align: center;">Basic Patterns of Human Inheritance .Complex Patterns of Inheritance Chromosomes and Human heredity Explain normal karyotypes from those with</p>	<p>2. Mutation and sexual reproduction lead to genetic variation in a population. As a basis for understanding this concept, students know:</p> <p>a. meiosis is an early step in sexual reproduction in which the pairs of chromosomes separate and segregate randomly during cell division to produce gametes containing one chromosome of each type. b. only certain cells in a multicellular organism undergo meiosis. c. how random chromosome segregation explains the probability that a particular allele will be in a gamete. d. new combinations of alleles may be generated in a zygote through fusion of male and female gametes (fertilization). e. why approximately half of an individual's DNA sequence comes from each parent. f. the role of chromosomes in determining an individual's sex. g. how to predict possible combinations of alleles in a zygote from the genetic makeup of the parents.</p>	<p>Study Guide Chapter 10.11.12 Quick Check Science notebook 10.11,12 Fast file Unit 3 resources Launch lab worksheets Test &Quizzes</p> <p>Lab Smile</p>
February	<p>The genetic material</p> <p>Replication of DNA</p> <p>DNA ,RNA and protein</p> <p>Gene Regulation and Mutation</p>	<p>4. Genes are a set of instructions, encoded in the DNA sequence of each organism that specify the sequence of amino acids in proteins characteristic of that organism. As a basis for understanding this concept, students know:</p> <p>a. the general pathway by which ribosomes synthesizes proteins, using tRNAs to translate genetic information in mRNA. b. how to apply the genetic coding rules to predict the sequence of amino acids</p>	<p>Study Guide</p> <p>Chapter 12 &13 Quick Check Science notebook,12 Fast file Unit 3 resources Launch lab worksheets Test &Quizzes</p>

		<p>from a sequence of codons in RNA.</p> <p>c. how mutations in the DNA sequence of a gene may or may not affect the expression of the gene, or the sequence of amino acids in an encoded protein.</p> <p>d. specialization of cells in multicellular organisms is usually due to different patterns of gene expression rather than to differences of the genes themselves.</p> <p>e. proteins can differ from one another in the number and sequence of amino acids.</p> <p>f.* why proteins having different amino acid sequences typically have different shapes and chemical properties.</p>	
March	<p>Evolution Chapter 15 Darwin's development a theory of evolution based on natural selection Evidence of Evolution Shaping Evolutionary Theory</p>	<p>7. The frequency of an allele in a gene pool of a population depends on many factors, and may be stable or unstable over time.</p> <p>As a basis for understanding this concept, students know:</p> <p>a. why natural selection acts on the phenotype rather than the genotype of an organism.</p> <p>b. why alleles that are lethal in a homozygous individual may be carried in a heterozygote, and thus maintained in a gene pool.</p> <p>c. new mutations are constantly being generated in a gene pool.</p> <p>d variation within a species increases the likelihood that at least some members of a species will survive under changed environmental conditions.</p> <p>e.* the conditions for Hardy-Weinberg equilibrium in a population, and why these conditions are not met in nature.</p> <p>f.* how to solve the Hardy-Weinberg equation to determine the predicted frequency of genotypes in a population, given the frequency of phenotypes</p>	<p>Study Guide</p> <p>Chapter 16&17 Quick Check Science notebook, Fast file Unit 7 resources Launch lab worksheets Test &Quizzes</p>
April	<p>Chapter 32.Ingumentary system ,Skeletal and Muscular System Chapter 33 Nervous</p>	<p>9. As a result of the coordinated structures and functions of organ systems, the internal environment of the human body remains relatively stable (homeostatic), despite changes</p>	<p>Study Guide</p> <p>Chapter 32-37 Quick Check Science notebook, Chapter 32-</p>

	<p>System Chapter 34 Circulatory ,Respiratory and Excretory System Chapter 35 Digestive and Endocrine System Chapter 36 Human reproduction and Development Chapter 37 Immune System</p>	<p>in the outside environment. As a basis for understanding this concept, students know:</p> <ol style="list-style-type: none"> how the complementary activity of major body systems provides cells with oxygen and nutrients, and removes toxic waste products such as carbon dioxide. how the nervous system mediates communication between different parts of the body and interactions with the environment. how feedback loops in the nervous and endocrine systems regulate conditions within the body. the functions of the nervous system, and the role of neurons in transmitting electrochemical impulses. the roles of sensory neurons, interneurons, and motor neurons in sensation, thought, and response. * the individual functions and sites of secretion of digestive enzymes (amylases, proteases, nucleases, lipases), stomach acid, and bile salts. * the homeostatic role of the kidneys in the removal of nitrogenous wastes, and of the liver in blood detoxification and glucose balance. * the cellular and molecular basis of muscle contraction, including the roles of actin, myosin, Ca⁺², and ATP. * how hormones (including digestive, reproductive, osmoregulatory) provide internal feedback mechanisms for homeostasis at the cellular level and in whole organisms. 	<p>37 Fast file Unit 6resources Launch lab worksheets Laboratory investigating Written assignments Test &Quizzes</p>
<p>May</p>	<p>Bacteria and Viruses Chapter 18 Bacteria are prokaryotic cells Viruses and Prions</p>	<p>1.j* how eukaryotic cells are given shape and internal organization by a cytoskeleton and/or cell wall. 1.c. how prokaryotic cells, eukaryotic cells (including those from plants and animals), and viruses differ in complexity and general structure.</p>	<p>Study Guide Chapter 18 Quick Check Science notebook, Fast file Unit 7 resources Launch lab worksheets Test &Quizzes Final</p>

