

Science Planned Course: Honors Biology II Grades 11-12

Unit: How Populations Evolve

Content Standard: **Understand that science is limited to the study of the concrete aspects of the world and the universe.**
Understand the evolution of populations.

State Curriculum Standard: **3.1.12 C Assess and apply patterns in science and technology.**
3.3.10 D Explain the mechanisms of the theory of evolution.
3.3.12 D Analyze the theory of evolution.

Course Content	Student Performance	Resources	Assessments
<p>A. Evidence of Evolution.</p> <ul style="list-style-type: none"> Changing species idea history Fossil record Reinforcements of fossil record <p>B. Darwin's Theory and Modern Synthesis.</p> <ul style="list-style-type: none"> Natural selection as the mechanism of evolution Population genetics Causes of microevolution <p>C. Variation and Natural Selection.</p> <ul style="list-style-type: none"> Polymorphism Generation of variation Natural and sexual selection effects on variation Evolutionary fitness 	<ul style="list-style-type: none"> Read Chapter 13 of text Read additional articles/excerpts as assigned Complete study guide sections Complete assigned laboratory investigations Participate in small group and class discussions Demonstrate evaluative and critical thinking skills in both oral and written format 	<ul style="list-style-type: none"> Text: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 256 to 279 Study Guide: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 143 to 154 PowerPoint lectures (DVD)/Instructor's Guide to Media and Text: (<u>Biology: Concepts and Connections</u>. Benjamin Cummings, 4th ed. 2003): pp. 120 to 131 Lab activities: <u>Laboratory Investigations for Biology</u>. (Benjamin Cummings, 2nd ed. 2003). Teacher-developed handouts and notes Video tapes/DVDs Posters and visual aids Other selected articles/excerpts 	<ul style="list-style-type: none"> Quizzes/Tests Projects (In and outside of class) Presentations Video/DVD follow-up activities Study guide Lab Report evaluations Homework assignments Teacher observation and anecdotal information

Science Planned Course: Honors Biology II Grades 11-12

Unit: The Origin of Species and the Tracing of Evolutionary History

Content Standard: **Demonstrate understanding of the history of life as a record of ancient earth inhabited by constantly changing populations.**
Explain how living things are organized for study.
Describe Binomial Nomenclature.
Understand that systems of classification are not constant.

State Curriculum Standard: **3.1.12 C Assess and apply patterns in science and technology.**
3.3.10 D Explain the mechanisms of the theory of evolution.
3.3.12 A Explain the relationship between structure and function at all levels of organization.
3.3.12 D Analyze the theory of evolution.

Course Content	Student Performance	Resources	Assessments
<p>A. Concepts of Species.</p> <ul style="list-style-type: none"> Biological concept Reproductive barriers <p>B. Speciation.</p> <ul style="list-style-type: none"> Geographic isolation Tempo <p>C. Earth History and Macroevolution.</p> <ul style="list-style-type: none"> Geologic time scale Continental Drift Mass extinction "Evo-devo" Phylogenetic trees <p>D. Systematics and Phylogenetics.</p> <ul style="list-style-type: none"> Taxonomy Homology/Analogy/Convergent evolution Molecular biology comparisons Cladistic analysis <p>E. The Domains of Life.</p> <ul style="list-style-type: none"> Ever-changing 	<ul style="list-style-type: none"> Read Chapter 14 and 15 of text Read additional articles/excerpts as assigned Complete study guide sections Complete assigned laboratory investigations Participate in small group and class discussions Demonstrate evaluative and critical thinking skills in both oral and written format 	<ul style="list-style-type: none"> Text: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 280 to 314 Study Guide: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 155 to 173 PowerPoint lectures (DVD)/Instructor's Guide to Media and Text: (<u>Biology: Concepts and Connections</u>. Benjamin Cummings, 4th ed. 2003): pp. 132 to 146 Teacher-developed handouts and notes Video tapes/DVDs Posters and visual aids Other selected articles/excerpts 	<ul style="list-style-type: none"> Quizzes/Tests Projects (In and outside of class) Presentations Video/DVD follow-up activities Study guide Lab Report evaluations Homework assignments Teacher observation and anecdotal information

Science Planned Course: Honors Biology II Grades 11-12

Unit: **The Origin and Evolution of Microbial Life: Prokaryotes and Protists**

Content Standard: **Utilize known theories of the origin of life to examine how life came about.**
Identify and characterize microorganisms and identify their relationship with humans.

State Curriculum Standard: **3.1.12 C Assess and apply patterns in science and technology.**
3.3.10 A Explain the structural and functional similarities and differences found among living things
3.3.10 D Explain the mechanisms of the theory of evolution.
3.3.12 A Explain the relationship between structure and function at all levels of organization.

Course Content	Student Performance	Resources	Assessments
<p>A. Early Earth and the Origin of Life.</p> <ul style="list-style-type: none"> • Early atmosphere • Spontaneous generation • Biogenesis/Pasteur experiment • Miller-Urey experiment/Oparin's Hypothesis • RNA as first genetic material and cooperative <p>B. Prokaryotes.</p> <ul style="list-style-type: none"> • Archaea vs. Bacteria • Prokaryote diversity within characteristics • Disease-causing bacteria <p>C. Protists.</p> <ul style="list-style-type: none"> • Endosymbiotic origin • Protist diversity • Protozoa • Algae • Fungus-like • Role in multi-cellular evolution 	<ul style="list-style-type: none"> • Read Chapter 16 of text • Read additional articles/excerpts as assigned • Complete study guide sections • Complete assigned laboratory investigations • Participate in small group and class discussions • Demonstrate evaluative and critical thinking skills in both oral and written format • View prepared slides 	<ul style="list-style-type: none"> • Text: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 316 to 343 • Study Guide: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 174 to 184 • PowerPoint lectures (DVD)/Instructor's Guide to Media and Text: (<u>Biology: Concepts and Connections</u>. Benjamin Cummings, 4th ed. 2003): pp. 147 to 160 • Teacher-developed handouts and notes • Video tapes/DVDs • Posters and visual aids • Other selected articles/excerpts 	<ul style="list-style-type: none"> • Quizzes/Tests • Projects (In and outside of class) • Presentations • Video/DVD follow-up activities • Study guide • Lab Report evaluations • Homework assignments • Teacher observation and anecdotal information

Science Planned Course: Honors Biology II Grades 11-12

Unit: **Plants, Fungi, and the Colonization of Land**

Content Standard: **Describe the evolutionary patterns of vascular and non-vascular plants through examining their similarities and differences. Identify and characterize Fungi and demonstrate their relationship with humans.**

State Curriculum Standard: **3.1.12 C Assess and apply patterns in science and technology.**

3.3.10 A Explain the structural and functional similarities and differences found among living things

3.3.10 D Explain the mechanisms of the theory of evolution.

3.3.12 A Explain the relationship between structure and function at all levels of organization.

Course Content	Student Performance	Resources	Assessments
<p>A. Introduction to Plants.</p> <ul style="list-style-type: none"> Classification Terrestrial adaptations <p>B. Plant Evolution and Diversity.</p> <ul style="list-style-type: none"> Algal ancestors Plant phylogeny Alternation of Generations <p>C. Bryophytes.</p> <ul style="list-style-type: none"> Adaptations Moss life cycle <p>D. Seedless plants.</p> <ul style="list-style-type: none"> Adaptations Fern/pine tree life cycles <p>E. Angiosperms.</p> <ul style="list-style-type: none"> Adaptations Monocot vs. Dicot Life cycle example Evolution 	<ul style="list-style-type: none"> Read Chapter 17 of text Read additional articles/excerpts as assigned Complete study guide sections Complete assigned laboratory investigations Participate in small group and class discussions Demonstrate evaluative and critical thinking skills in both oral and written format View prepared slides 	<ul style="list-style-type: none"> Text: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 344 to 365 Study Guide: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 185 to 195 PowerPoint lectures (DVD)/Instructor's Guide to Media and Text: (<u>Biology: Concepts and Connections</u>. Benjamin Cummings, 4th ed. 2003): pp. 161 to 172 Teacher-developed handouts and notes Video tapes/DVDs Posters and visual aids Other selected articles/excerpts 	<ul style="list-style-type: none"> Quizzes/Tests Projects (In and outside of class) Presentations Video/DVD follow-up activities Study guide Lab Report evaluations Homework assignments Teacher observation and anecdotal information

Science Planned Course: Honors Biology II Grades 11-12

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Content Standard: **Describe the evolutionary patterns of vascular and non-vascular plants through examining their similarities and differences. Identify and characterize Fungi and demonstrate their relationship with humans.**

State Curriculum Standard: **3.1.12 C Assess and apply patterns in science and technology.**

3.3.10 A Explain the structural and functional similarities and differences found among living things

3.3.10 D Explain the mechanisms of the theory of evolution.

3.3.12 A Explain the relationship between structure and function at all levels of organization.

Course Content	Student Performance	Resources	Assessments
F. Fungi <ul style="list-style-type: none"> Characteristics Mushroom life cycle Mutualism with lichens and algae Fungi as parasites 	<ul style="list-style-type: none"> Read Chapter 17 of text Read additional articles/excerpts as assigned Complete study guide sections Complete assigned laboratory investigations Participate in small group and class discussions Demonstrate evaluative and critical thinking skills in both oral and written format View prepared slides 	<ul style="list-style-type: none"> Text: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 344 to 365 Study Guide: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 185 to 195 PowerPoint lectures (DVD)/Instructor's Guide to Media and Text: (<u>Biology: Concepts and Connections</u>. Benjamin Cummings, 4th ed. 2003): pp. 161 to 172 Teacher-developed handouts and notes Video tapes/DVDs Posters and visual aids Other selected articles/excerpts 	<ul style="list-style-type: none"> Quizzes/Tests Projects (In and outside of class) Presentations Video/DVD follow-up activities Study guide Lab Report evaluations Homework assignments Teacher observation and anecdotal information

Science Planned Course: Honors Biology II Grades 11-12

Unit: The Evolution of Animal Diversity

Content Standard: **Identify and characterize animals and demonstrate their relationship with humans.**
Understand the evolutionary relationships between the different phyla of the Animal Kingdom.

State Curriculum Standard: **3.1.12 C Assess and apply patterns in science and technology.**
3.3.10 A Explain the structural and functional similarities and differences found among living things
3.3.10 D Explain the mechanisms of the theory of evolution.
3.3.12 A Explain the relationship between structure and function at all levels of organization.
3.3.12 B Analyze the chemical and structural basis of living organisms.

Course Content	Student Performance	Resources	Assessments
<p>A. Animal Evolution and Diversity.</p> <ul style="list-style-type: none"> Basic animal life cycle Invertebrate evolution <p>B. Invertebrates.</p> <ul style="list-style-type: none"> <i>Porifera</i> characteristics <i>Cnidaria</i> characteristics <i>Platyhelminthes</i> characteristics/life cycle Pseudo vs. true coelom <i>Nematoda</i> characteristics <i>Mollusca</i> diversity/structure <i>Annelida</i> characteristics/structure Segmentation adaptation <i>Arthropoda</i> diversity/structure <i>Insecta</i> order diversity <i>Echinodermata</i> characteristics/structure <i>Chordata</i> diversity/adaptations Lancelet structure 	<ul style="list-style-type: none"> Read Chapter 18 of text Read additional articles/excerpts as assigned Complete study guide sections Complete assigned laboratory investigations Participate in small group and class discussions Demonstrate evaluative and critical thinking skills in both oral and written format View prepared slides View jarred specimens Dissect selected invertebrates Dissect selected vertebrates 	<ul style="list-style-type: none"> Text: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 365 to 397 Study Guide: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 196 to 209 PowerPoint lectures (DVD)/Instructor's Guide to Media and Text: (<u>Biology: Concepts and Connections</u>. Benjamin Cummings, 4th ed. 2003): pp. 173 to 188 Teacher-developed handouts and notes Video tapes/DVDs Posters and visual aids Other selected articles/excerpts 	<ul style="list-style-type: none"> Quizzes/Tests Projects (In and outside of class) Presentations Video/DVD follow-up activities Study guide Lab Report/dissection evaluations Homework assignments Teacher observation and anecdotal information

Science Planned Course: Honors Biology II Grades 11-12

Unit: The Evolution of Animal Diversity

Content Standard: **Identify and characterize animals and demonstrate their relationship with humans.**
Understand the evolutionary relationships between the different phyla of the Animal Kingdom.

State Curriculum Standard: **3.1.12 C Assess and apply patterns in science and technology.**
3.3.10 A Explain the structural and functional similarities and differences found among living things
3.3.10 D Explain the mechanisms of the theory of evolution.
3.3.12 A Explain the relationship between structure and function at all levels of organization.
3.3.12 B Analyze the chemical and structural basis of living organisms.

Course Content	Student Performance	Resources	Assessments
C. Vertebrates. <ul style="list-style-type: none"> <i>Agnathans</i> Hinged jaw evolution Fish diversity/adaptations <i>Amphibia</i> evolution/adaptations <i>Reptilia</i> evolution/adaptations Thermoregulation <i>Aves</i> evolution/adaptations <i>Mammalia</i> evolution/diversity/adaptations Animal Kingdom phylogeny, traditional vs. molecular Effects on diversity 	<ul style="list-style-type: none"> Read Chapter 18 of text Read additional articles/excerpts as assigned Complete study guide sections Complete assigned laboratory investigations Participate in small group and class discussions Demonstrate evaluative and critical thinking skills in both oral and written format View prepared slides View jarred specimens Dissect selected invertebrates 	<ul style="list-style-type: none"> Text: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 365 to 397 Study Guide: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 196 to 209 PowerPoint lectures (DVD)/Instructor's Guide to Media and Text: (<u>Biology: Concepts and Connections</u>. Benjamin Cummings, 4th ed. 2003): pp. 173 to 188 Teacher-developed handouts and notes Video tapes/DVDs Posters and visual aids Other selected articles/excerpts 	<ul style="list-style-type: none"> Quizzes/Tests Projects (In and outside of class) Presentations Video/DVD follow-up activities Study guide Lab Report/dissection evaluations Homework assignments Teacher observation and anecdotal information

Science Planned Course: Honors Biology II Grades 11-12

Unit: **Human Evolution**

Content Standard: **Evaluate how new information can change existing theories and practice.**
Demonstrate understanding of the history of life as a record of ancient earth inhabited by constantly changing populations.

State Curriculum Standard: **3.1.12 C Assess and apply patterns in science and technology.**
3.3.10 A Explain the structural and functional similarities and differences found among living things.
3.3.10 D Explain the mechanisms of the theory of evolution.
3.3.12 A Explain the relationship between structure and function at all levels of organization.
3.3.12 B Analyze the chemical and structural basis of living organisms.
3.3.12 D Analyze the theory of evolution

Course Content	Student Performance	Resources	Assessments
<p>A. Primate Diversity.</p> <ul style="list-style-type: none"> Promisian/Anthrpoid diversity/classification Great Ape classification/evolution Ape/human similarities and differences <p>B. Hominid Evolution</p> <ul style="list-style-type: none"> Timeline Bipedalism vs. quadrapedalism First hominids <i>Homo</i> species' evolution/characteristics <p>C. Hypotheses of Hominid Evolution</p> <ul style="list-style-type: none"> Multiregional "Out of Africa" <p>D. Cultural History</p> <ul style="list-style-type: none"> Scavenging-hunting-gathering Agriculture Industrial Revolution 	<ul style="list-style-type: none"> Read Chapter 19 of text Read additional articles/excerpts as assigned Complete study guide sections Complete assigned laboratory investigations Participate in small group and class discussions Demonstrate evaluative and critical thinking skills in both oral and written format 	<ul style="list-style-type: none"> Text: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 398 to 409 Study Guide: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 210 to 216 PowerPoint lectures (DVD)/Instructor's Guide to Media and Text: (<u>Biology: Concepts and Connections</u>. Benjamin Cummings, 4th ed. 2003): pp. 189 to 195 Teacher-developed handouts and notes Video tapes/DVDs Posters and visual aids Other selected articles/excerpts 	<ul style="list-style-type: none"> Quizzes/Tests Projects (In and outside of class) Presentations Video/DVD follow-up activities Study guide Lab Report evaluations Homework assignments Teacher observation and anecdotal information

Science Planned Course: Honors Biology II Grades 11-12

Unit: **Behavioral Adaptations to the Environment**

Content Standard: **Illustrate the connections between animal behavior, evolution, and ecology.**

State Curriculum Standard: **3.1.12 C Assess and apply patterns in science and technology.**

3.3.10 A Explain the structural and functional similarities and differences found among living things.

3.3.12 B Analyze the chemical and structural basis of living organisms.

3.3.12 D Analyze the theory of evolution

Course Content	Student Performance	Resources	Assessments
<p>A. Behavior Concepts.</p> <ul style="list-style-type: none"> Behavioral biology/ecology Niko Tinbergen et al Experiment Genetic/environmental contributions Innate behavior/Fixed Action Patterns (FAPs) 5 Types of learning <p>B. Ecological Roles.</p> <ul style="list-style-type: none"> Circadian rhythms Kinesis/taxis/landmarks Cognitive map/migration Cost/benefit analysis of feeding behavior Specific examples <p>C. Sociobiology.</p> <ul style="list-style-type: none"> What is sociobiology Agnostic behavior Dominance hierarchy Territorial behavior Mating behavior Complex signaling Altruism/kin selection Edward O. Wilson Specific examples 	<ul style="list-style-type: none"> Read Chapter 37 of text Read additional articles/excerpts as assigned Complete study guide sections Complete assigned laboratory investigations Participate in small group and class discussions Demonstrate evaluative and critical thinking skills in both oral and written format 	<ul style="list-style-type: none"> Text: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 736 to 761 Study Guide: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 391 to 401 PowerPoint lectures (DVD)/Instructor's Guide to Media and Text: (<u>Biology: Concepts and Connections</u>. Benjamin Cummings, 4th ed. 2003): pp. 369 to 380 Teacher-developed handouts and notes Video tapes/DVDs Posters and visual aids Other selected articles/excerpts 	<ul style="list-style-type: none"> Quizzes/Tests Projects (In and outside of class) Presentations Video/DVD follow-up activities Study guide Lab Report evaluations Homework assignments Teacher observation and anecdotal information

Science Planned Course: Honors Biology II Grades 11-12

Unit: The Control of Gene Expression

Content Standard: **Develop an understanding of DNA, genes and chromosomes and their relationship to molecular genetics.**

State Curriculum Standard: **3.3.12 B Analyze the chemical and structural basis of living organisms.
3.3.12 C Explain gene inheritance and expression at the molecular level.**

Course Content	Student Performance	Resources	Assessments
<p>A. Prokaryote Gene Regulation.</p> <ul style="list-style-type: none"> What is gene expression The <i>lac</i> operon Other operons <p>B. Cellular Differentiation.</p> <ul style="list-style-type: none"> What is cellular differentiation Cloning/nuclear transplantation Stem cells <p>C. Eukaryote Gene Regulation.</p> <ul style="list-style-type: none"> DNA packaging X chromosome inactivation Transcription factors Alternative RNA splicing 4 mechanisms of protein regulation Gene expression “pipeline” <p>D. Embryonic Control</p> <ul style="list-style-type: none"> <i>Drosophila</i> development Homeotic gene Signal-transduction pathway Homeoboxes 	<ul style="list-style-type: none"> Read Chapter 11 of text Read additional articles/excerpts as assigned Complete study guide sections Complete assigned laboratory investigations Participate in small group and class discussions Demonstrate evaluative and critical thinking skills in both oral and written format 	<ul style="list-style-type: none"> Text: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 208 to 229 Study Guide: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 121 to 131 PowerPoint lectures (DVD)/Instructor’s Guide to Media and Text: (<u>Biology: Concepts and Connections</u>. Benjamin Cummings, 4th ed. 2003): pp. 97 to 107 Teacher-developed handouts and notes Video tapes/DVDs Posters and visual aids Other selected articles/excerpts 	<ul style="list-style-type: none"> Quizzes/Tests Projects (In and outside of class) Presentations Video/DVD follow-up activities Study guide Lab Report evaluations Homework assignments Teacher observation and anecdotal information

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Content Standard: **Develop an understanding of DNA, genes and chromosomes and their relationship to molecular genetics.**

State Curriculum Standard: **3.3.12 B Analyze the chemical and structural basis of living organisms.
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Course Content	Student Performance	Resources	Assessments
<p>E. Genetic Basis of Cancer.</p> <ul style="list-style-type: none"> • Oncogenes • Tumor-suppressor genes • Gene interference with signal-transduction pathways • Caused by accumulation of mutations • Specific examples 	<ul style="list-style-type: none"> • Read Chapter 11 of text • Read additional articles/excerpts as assigned • Complete study guide sections • Complete assigned laboratory investigations • Participate in small group and class discussions • Demonstrate evaluative and critical thinking skills in both oral and written format 	<ul style="list-style-type: none"> • Text: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 208 to 229 • Study Guide: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 121 to 131 • PowerPoint lectures (DVD)/Instructor's Guide to Media and Text: (<u>Biology: Concepts and Connections</u>. Benjamin Cummings, 4th ed. 2003): pp. 97 to 107 • Teacher-developed handouts and notes • Video tapes/DVDs • Posters and visual aids • Other selected articles/excerpts 	<ul style="list-style-type: none"> • Quizzes/Tests • Projects (In and outside of class) • Presentations • Video/DVD follow-up activities • Study guide • Lab Report evaluations • Homework assignments • Teacher observations and anecdotal information

Science Planned Course: Honors Biology II Grades 11-12

Unit: **DNA Technology and the Human Genome**

Content Standard: **Develop an understanding of DNA, genes and chromosomes and their relationship to human genetics and current DNA technology.**

State Curriculum Standard: **3.3.12 B Analyze the chemical and structural basis of living organisms.**

3.3.12 C Explain gene inheritance and expression at the molecular level.

3.8.10 B Analyze how human integrity and technological resources satisfy specific human needs and improve the quality of life.

3.8.11 A Analyze the interactions and constraints of science and technology in society.

3.8.11 C Evaluate the consequences and impacts of scientific and technological solutions.

Course Content	Student Performance	Resources	Assessments
<p>A. Bacteria as Tools for Manipulation.</p> <ul style="list-style-type: none"> Transformation Transduction Conjugation Plasmids Restriction enzymes Recombinant DNA Bacterial gene cloning <p>B. Other DNA Technologies.</p> <ul style="list-style-type: none"> Complementary DNA (cDNA) Nucleic acid probes DNA microarrays Gel electrophoresis procedure Restriction fragment analysis procedure Polymerase Chain Reaction (PCR) procedure 	<ul style="list-style-type: none"> Read Chapter 12 of text Read additional articles/excerpts as assigned Complete study guide sections Complete assigned laboratory investigations Participate in small group and class discussions Demonstrate evaluative and critical thinking skills in both oral and written format Student-driven bioethics debates 	<ul style="list-style-type: none"> Text: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 230 to 253. Study Guide: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 132 to 142. PowerPoint lectures (DVD)/Instructor's Guide to Media and Text: (<u>Biology: Concepts and Connections</u>. Benjamin Cummings, 4th ed. 2003): pp. 108 to 119. Teacher-developed handouts and notes Video tapes/DVDs Posters and visual aids Other selected articles/excerpts 	<ul style="list-style-type: none"> Quizzes/Tests Projects (In and outside of class) Presentations/debates Video/DVD follow-up activities Study guide Lab Report evaluations Homework assignments Teacher observation and anecdotal information

Science Planned Course: Honors Biology II Grades 11-12

Unit: **DNA Technology and the Human Genome**

Content Standard: **Develop an understanding of DNA, genes and chromosomes and their relationship to human genetics and current DNA technology.**

State Curriculum Standard: **3.3.12 B Analyze the chemical and structural basis of living organisms.**

3.3.12 C Explain gene inheritance and expression at the molecular level.

3.8.10 B Analyze how human integrity and technological resources satisfy specific human needs and improve the quality of life.

3.8.11 A Analyze the interactions and constraints of science and technology in society.

3.8.11 C Evaluate the consequences and impacts of scientific and technological solutions.

Course Content	Student Performance	Resources	Assessments
C. Human Genome <ul style="list-style-type: none"> Coding/Noncoding DNA "Jumping genes" Human Genome Project (HGP) Three-stage approach by HGP 	<ul style="list-style-type: none"> Read Chapter 12 of text Read additional articles/excerpts as assigned Complete study guide sections Complete assigned laboratory investigations 	<ul style="list-style-type: none"> Text: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 230 to 253. Study Guide: <u>Biology: Concepts and Connections</u>. (Benjamin Cummings, 4th ed. 2003): pp. 132 to 142. 	<ul style="list-style-type: none"> Quizzes/Tests Projects (In and outside of class) Presentations/debates Video/DVD follow-up activities Study guide Lab Report evaluations Homework assignments Teacher observation and anecdotal information
D. Other Applications <ul style="list-style-type: none"> Technology in courts Recombinant cell products Pharmaceuticals Agriculture Gene therapy 	<ul style="list-style-type: none"> Participate in small group and class discussions Demonstrate evaluative and critical thinking skills in both oral and written format Student-driven bioethics debates 	<ul style="list-style-type: none"> PowerPoint lectures (DVD)/Instructor's Guide to Media and Text: (<u>Biology: Concepts and Connections</u>. Benjamin Cummings, 4th ed. 2003): pp. 108 to 119. Teacher-developed handouts and notes Video tapes/DVDs Posters and visual aids Other selected articles/excerpts 	
E. Risks and Ethics <ul style="list-style-type: none"> Genetically Modified (GM) organisms Eugenics Other bioethics examples 			