Science Planned Course
Honors Biology I: Grade 10

Unit: **The Life of the Cell**

Content Standard: **Explain why natural selection can act only on inherited traits.**
Apply the concept of natural selection to illustrate and account for a Species' survival, extinction or change over time.
Explain the importance of order in a system.

State Curriculum Standard:
3.1.7A Explain the parts of a simple system and their relationship to each other.
3.1.10B Describe concepts of models as a way to predict and understand science and technology.
3.1.10E Describe patterns of change in nature, physical and man-made systems.
3.2.10A Apply knowledge and understanding about the nature of scientific and technological knowledge.
3.2.10C Apply the elements of scientific inquiry to solve problems.
3.3.10D Explain the mechanisms of the theory of evolution.

Course Content	Student Performance	Resources	Assessments
A. The Scope of Biology. B. The Process of Science. C. Evolution, Unity and Diversity. D. Biology and Everyday Life.	• Read sections 1.1 – 1.8 in text • Complete applicable study guide worksheets • Implement assortment of lab activities and lab topics • View and summarize video, "Medicine Man"	• Biology: Concepts and Connections (Prentice-Hall, 2006) • Biology: Study Guide (Prentice-Hall, 2006) • Investigating Living Systems (Glencoe, 1994) • Laboratory Investigations for Biology (Pearson Education, 2003) • Instructors guide to text and media (Pearson Education, 2003)	• Web/CD activities guided class activities / teacher observation • Formal lab report to assess lab techniques and content knowledge • Study guide • Enrichment activities • Assorted PSSA activities • Quizzes and chapter test

Science Planned Course
Honors Biology I: Grade 10

Unit: **The Life of the Cell**

Content Standard: **Understand that carbon can form several types of compounds.**
Describe various types of chemical reactions.
Explain the formation of compounds and their resulting properties.

State Curriculum Standard: **3.1.10E Describe patterns of change in nature, physical and man-made systems.**
3.4.10A Explain concepts about the structure and properties of matter.

Course Content	Student Performance	Resources	Assessments
A. Atoms and Molecules. B. The Properties of Water. C. Rearrangements of Atoms.	• Read sections 2.1 – 2.17 in text • Complete applicable study guide worksheets • Complete activities on content topics • View and summarize content-related videos	• Biology: Concepts and Connections (Prentice-Hall, 2006) • Biology: Study Guide (Prentice-Hall, 2006) • Investigating Living Systems (Glencoe, 1994) • Laboratory Investigations for Biology (Pearson Education, 2003) • Instructors guide to text and media (Pearson Education, 2003)	• Web/CD activities guided class activities / teacher observation • Formal lab report to assess lab techniques and content knowledge • Study guide • Enrichment activities • Assorted PSSA activities • Quizzes and chapter test

Science Planned Course
Honors Biology I: Grade 10

Unit: **The Life of the Cell**

Content Standard: **Describe the relationship between the structure of organic molecules and the function they serve in living organisms.**
Explain cell functions and processes in terms of chemical reactions and energy changes.
Understand that carbon can form several types of compounds.

State Curriculum Standard: **3.1.10E Describe patterns of change in nature.**
3.2.10B Apply process knowledge and organize scientific and technological phenomena in varied ways.
3.2.10C Apply the elements of scientific inquiry to solve problems.
3.2.10D Identify and apply the technological design process to solve problems.
3.3.10B Describe and explain the chemical and structural basis of living organisms.
3.4.10A Explain concepts about the structure and properties of matter.

Course Content	Student Performance	Resources	Assessments
A. Introduction to Organic Compounds and Their Polymers. B. Carbohydrates. C. Lipids. D. Proteins. E. Nucleic Acids.	• Read sections 3.1 – 3.20 in text • Complete applicable study guide worksheets • Complete lab activities and lab topics • View and summarize content-related videos	• Biology: Concepts and Connections (Prentice-Hall, 2006) • Biology: Study Guide (Prentice-Hall, 2006) • Investigating Living Systems (Glencoe, 1994) • Laboratory Investigations for Biology (Pearson Education, 2003) • Instructors guide to text and media (Pearson Education, 2003)	• Web/CD activities guided class activities / teacher observation • Formal lab report to assess lab techniques and content knowledge • Study guide • Enrichment activities • Assorted PSSA activities • Quizzes and chapter test

Science Planned Course
Honors Biology I: Grade 10

Unit: **The Life of the Cell**

Content Standard: **Identify the specialized structures and regions of the cell and the functions of each.**
Explain how cells store and use information to guide their functions.
Explain cell functions and processes in terms of chemical reactions and energy changes.
Identify the levels of organization from cell to organism.

State Curriculum Standard: **3.1.10E Describe patterns of change in nature, physical and man-made systems.**
3.2.10A Apply knowledge and understanding about the nature of scientific and technological knowledge.
3.2.10B Apply process knowledge and organize scientific and technological phenomena in varied ways.
3.2.10C Apply the elements of scientific inquiry to solve problems.
3.2.10D Identify and apply the technological design process to solve problems.
3.3.10B Describe and explain the chemical and structural basis of living organisms.
3.4.10A Explain concepts about the structure and properties of matter.

Course Content	Student Performance	Resources	Assessments
A. Introduction to the World of the Cell. B. Organelles of the Endomembrane System. C. Energy-Converting Organelles. D. The Cytoskeleton and Related Structures. E. Eukaryotic Cell Surfaces and Junctions. F. Functional Categories of Organelles.	• Read sections 4.1 – 4.21 in text • Read sections 15.10 and 15.14 • Complete applicable study guide worksheets • Complete lab activities on content topics • View and summarize content-related videos	• Biology: Concepts and Connections (Prentice-Hall, 2006) • Biology: Study Guide (Prentice-Hall, 2006) • Investigating Living Systems (Glencoe, 1994) • Laboratory Investigations for Biology (Pearson Education, 2003) • Instructors guide to text and media (Pearson Education, 2003)	• Web/CD activities guided class activities / teacher observation • Formal lab report to assess lab techniques and content knowledge • Study guide • Enrichment activities • Assorted PSSA activities • Quizzes and chapter test

Science Planned Course
Honors Biology I: Grade 10

Unit: **The Life of the Cell**

Content Standard: **Explain the relationship between structure and function at the molecular and cellular levels.**
Identify the specialized structures and regions of the cell and the functions of each.

State Curriculum Standard: **3.1.10D Apply scale as a way of relating concepts and ideas to one another by some measure.**
3.1.10E Describe patterns of change in nature, physical and man-made systems.
3.3.10A Explain the structural and functional similarities and differences found among living things.
3.3.10B Describe and explain the chemical and structural basis of living organisms.

Course Content	Student Performance	Resources	Assessments
A. Energy and the Cell. B. How Enzymes Work. C. Membrane Structure and Function.	• Read sections 5.1 – 5.21 in text • Utilize applicable study guide worksheets • Complete activities on content topics • View and summarize content-related videos	• Biology: Concepts and Connections (Prentice-Hall, 2006) • Biology: Study Guide (Prentice-Hall, 2006) • Investigating Living Systems (Glencoe, 1994) • Laboratory Investigations for Biology (Pearson Education, 2003) • Instructors guide to text and media (Pearson Education, 2003)	• Web/CD activities guided class activities / teacher observation • Formal lab report to assess lab techniques and content knowledge • Study guide • Enrichment activities • Assorted PSSA activities • Quizzes and chapter test

Science Planned Course
Honors Biology I: Grade 10

Unit: **The Life of the Cell**

Content Standard: **Identify the specialized structures and regions of the cell and the functions of each.**
Explain cell functions and processes in terms of chemical reactions and energy changes.

State Curriculum Standard: **3.1.7A Explain the parts of a simple system and their relationships to each other.**
3.2.10C Apply the elements of scientific inquiry to solve problems.

Course Content	Student Performance	Resources	Assessments
A. Introduction to Cellular Respiration. B. Basic Mechanisms of Energy Release and Storage. C. Stages of Cellular Respiration and Fermentation. D. Interconnections Between Molecular Breakdown and Synthesis.	• Read sections 6.1 – 6.18 in text • Utilize applicable study guide worksheets • Complete lab activities on content lab topics • View and summarize content-related videos	• Biology: Concepts and Connections (Prentice-Hall, 2006) • Biology: Study Guide (Prentice-Hall, 2006) • Investigating Living Systems (Glencoe, 1994) • Laboratory Investigations for Biology (Pearson Education, 2003) • Instructors guide to text and media (Pearson Education, 2003)	• Web/CD activities guided class activities / teacher observation • Formal lab report to assess lab techniques and content knowledge • Study guide • Enrichment activities • Assorted PSSA activities • Quizzes and chapter test

Science Planned Course
Honors Biology I: Grade 10

Unit: **The Life of the Cell**

Content Standard: **Identify the specialized structures and regions of the cell and the functions of each.**
Explain cell functions and processes in terms of chemical reactions and energy changes.

State Curriculum Standard: **3.1.7A Explain the parts of a simple system and their relationship to each other.**
3.2.10C Apply the elements of scientific inquiry to solve problems.
3.3.10B Describe and explain the chemical and structural basis of living organisms.

Course Content	Student Performance	Resources	Assessments
A. An Overview of Photosynthesis. B. The Light Reactions: Converting Solar Energy to Chemical Energy. C. The Calvin Cycle: Converting CO_2 to Sugars. D. Photosynthesis Reviewed. and Extended. E. Photosynthesis, Solar Radiation and Earth's Atmosphere.	• Read sections 7.1 – 7/14 in text • Utilize applicable study guide worksheets • Completion of lab activities on content topics • View and summarize content-related videos	• Biology: Concepts and Connections (Prentice-Hall, 2006) • Biology: Study Guide (Prentice-Hall, 2006) • Investigating Living Systems (Glencoe, 1994) • Laboratory Investigations for Biology (Pearson Education, 2003) • Instructors guide to text and media (Pearson Education, 2003)	• Web/CD activities guided class activities / teacher observation • Formal lab report to assess lab techniques and content knowledge • Study guide • Enrichment activities • Assorted PSSA activities • Quizzes and chapter test

Science Planned Course
Honors Biology I: Grade 10

Unit: **Cellular Reproduction and Genetics**

Content Standard: **Compare and contrast the function of mitosis and meiosis.**
Distinguish different reproductive patterns in living things.

State Curriculum Standard: **3.1.7A Explain the parts of a simple system and their relationship to each other.**
3.1.10B Explain the structural and functional similarities and differences found among living things.
3.3.10C Describe how genetic information is inherited and expressed.

Course Content	Student Performance	Resources	Assessments
A. Connections Between Cell Division and Reproduction. B. The Eukaryotic Cell Cycle and Mitosis. C. Meiosis and Crossing Over. D. Alterations of Chromosome Number and Structure.	• Read sections 8.1 – 8.23 in text • Utilize applicable study guide worksheets • Completion of lab activities on content topics • View and summarize content-related videos	• Biology: Concepts and Connections (Prentice-Hall, 2006) • Biology: Study Guide (Prentice-Hall, 2006) • Investigating Living Systems (Glencoe, 1994) • Laboratory Investigations for Biology (Pearson Education, 2003) • Instructors guide to text and media (Pearson Education, 2003)	• Web/CD activities guided class activities / teacher observation • Formal lab report to assess lab techniques and content knowledge • Study guide • Enrichment activities • Assorted PSSA activities • Quizzes and chapter test

Science Planned Course
Honors Biology I: Grade 10

Unit: **Cellular Reproduction and Genetics**

Content Standard: **Distinguish between different types of model techniques and apply their appropriate use in specific applications.**
Describe mutations' effects on a traits' expression.
Explain different types of inheritance.

State Curriculum Standard: **3.1.10B Describe concepts of models as a way to predict and understand science and technology.**
3.3.10C Describe how genetic information is inherited and expressed.

Course Content	Student Performance	Resources	Assessments
A. Mendel's Principles. B. Variations on Mendel's Principles. C. The Chromosomal Basis of Inheritance. D. Sex Chromosomes and Sex-Linked Genes.	• Read sections 9/1 – 9/23 in text • Utilize applicable study guide worksheets • Completion of lab activities on content topics • View and summarize video, "GATTACA"	• Biology: Concepts and Connections (Prentice-Hall, 2006) • Biology: Study Guide (Prentice-Hall, 2006) • Investigating Living Systems (Glencoe, 1994) • Laboratory Investigations for Biology (Pearson Education, 2003) • Instructors guide to text and media (Pearson Education, 2003)	• Web/CD activities guided class activities / teacher observation • Formal lab report to assess lab techniques and content knowledge • Study guide • Enrichment activities • Assorted PSSA activities • Quizzes and chapter test

Science Planned Course
Honors Biology I: Grade 10

Unit: **Cellular Reproduction and Genetics**

Content Standard: **Describe mutations' effects on a traits' expression.**
Explain the relationship among DNA, genes and chromosomes.
Describe the role of DNA in protein synthesis.
Explain the role of mutations and gene recombination in changing a population of organisms.

State Curriculum Standard: **3.1.10B Describe concepts of models as a way to predict and understand science and technology.**
3.2.10A Apply knowledge and understanding about the nature of scientific and technological knowledge.
3.2.10C Apply the elements of scientific inquiry to solve problems.
3.3.10B Describe and explain the chemical and structural basis of living organisms.
3.3.10C Describe how genetic information is inherited and expressed.
3.3.10D Explain the mechanisms of the theory of evolution.

Course Content	Student Performance	Resources	Assessments
A. The Structure of the Genetic Material. B. DNA Replication. C. The Flow of Genetic Information from DNA to RNA. D. Viruses: Genes in Packages.	• Read sections 10.1 – 10. 22 in text • Utilize applicable study guide worksheets • Completion of lab activities on content topics • View and summarize video, "Outbreak"	• Biology: Concepts and Connections (Prentice-Hall, 2006) • Biology: Study Guide (Prentice-Hall, 2006) • Investigating Living Systems (Glencoe, 1994) • Laboratory Investigations for Biology (Pearson Education, 2003) • Instructors guide to text and media (Pearson Education, 2003)	• Web/CD activities guided class activities / teacher observation • Formal lab report to assess lab techniques and content knowledge • Study guide • Enrichment activities • Assorted PSSA activities • Quizzes and chapter test

Science Planned Course
Honors Biology I: Grade 10

Unit: **Cellular Reproduction and Genetics**

Content Standard: **Describe mutations' effects on a traits' expression**.
Explain the relationship among DNA, genes and chromosomes.
Describe the role of DNA in protein synthesis.
Explain the role of mutations and gene recombination in changing a population of organisms.
Compare modern-day descendants of extinct species and propose possible scientific accounts for their present day appearance.

State Curriculum Standard: **3.1.10A Discriminate among the concepts of systems, subsystems, feedback and control in solving technological problems.**
3.2.10C Apply the elements of scientific inquiry to solve problems.
3.3.10C Describe how genetic information is inherited and expressed.
3.3.10D Explain the mechanisms of the theory of evolution.
3.8.10A Analyze the relationship between societal demands and scientific and technological enterprises.

Course Content	Student Performance	Resources	Assessments
A. Gene Regulation in Prokaryotes. B. Cellular Differentiation and the Cloning of Eukaryotes C. Gene Regulation in Eukaryotes. D. The Genetic Control of Embryonic Development. E. The Genetic Basis of Cancer.	• Read sections 11.1 – 11.19 in text • Utilize applicable study guide worksheets • Completion of lab activities on content topics • View and summarize video, "6th Day"	• Biology: Concepts and Connections (Prentice-Hall, 2006) • Biology: Study Guide (Prentice-Hall, 2006) • Investigating Living Systems (Glencoe, 1994) • Laboratory Investigations for Biology (Pearson Education, 2003) • Instructors guide to text and media (Pearson Education, 2003)	• Web/CD activities guided class activities / teacher observation • Formal lab report to assess lab techniques and content knowledge • Study guide • Enrichment activities • Assorted PSSA activities • Quizzes and chapter test

Science Planned Course
Honors Biology I: Grade 10

Unit: **Cellular Reproduction and Genetics**

Content Standard: **Compare and contrast different scientific measurement systems; select the best measurement system.**
Identify problems and opportunities that exist in our society and apply various problem-solving methods.

State Curriculum Standard:
3.1.10A Discriminate among the concepts of systems, subsystems, feedback and control in solving technological problems.
3.6.10A Apply biotechnologies that relate to propagating, growing, maintaining, adapting, treating and converting.
3.7.10A Identify and safely use a variety of tools, basic machines, materials and techniques to solve problems and answer questions.
3.7.10B Apply appropriate instruments and apparatus to examine a variety of objects and processes.
3.8.10A Analyze the relationship between societal demands and scientific and technological enterprises.

Course Content	Student Performance	Resources	Assessments
A. Bacteria as Tools for Manipulating DNA. B. Other Tools of DNA Technology. C. The Challenge of the Human Genome. D. Other Applications of DNA Technology. E. Risks and Ethical Questions.	• Read sections 12.1 12.21 in text • Utilize applicable study guide worksheets • Completion of lab activities on content topics • View and summarize content-related videos	• Biology: Concepts and Connections (Prentice-Hall, 2006) • Biology: Study Guide (Prentice-Hall, 2006) • Investigating Living Systems (Glencoe, 1994) • Laboratory Investigations for Biology (Pearson Education, 2003) • Instructors guide to text and media (Pearson Education, 2003)	• Web/CD activities guided class activities / teacher observation • Formal lab report to assess lab techniques and content knowledge • Study guide • Enrichment activities • Assorted PSSA activities • Quizzes and chapter test

Science Planned Course
Honors Biology I: Grade 10

Unit: **Ecology**

Content Standard: **Analyze the effect of natural resources.**
Identify major biones and explain their similarities and differences.
Compare and contrast interactions of biotic and abiotic factors.
Evaluate the efficiency of energy flow.

State Curriculum Standard: **4.6.10A Explain the biotic and abiotic components of an ecosystem and their interactions.**
4.6.12A Analyze the interdependence of an ecosystem.
4.8.12A Explain how technology has influenced the sustainabiliuty of natural resources over time.

Course Content	Student Performance	Resources	Assessments
A. Aquatic Biomes. B. Terrestrial Biomes.	• Read sections 34.8, 34.10, 34.12 – 34.13, 34.15 – 34.18 in text • Utilize applicable study guide worksheets • Completion of lab activities on content topics • View and summarize video, "Biomes" • Research assigned Biome to present to class	• Biology: Concepts and Connections (Prentice-Hall, 2006) • Biology: Study Guide (Prentice-Hall, 2006) • Investigating Living Systems (Glencoe, 1994) • Laboratory Investigations for Biology (Pearson Education, 2003) • Instructors guide to text and media (Pearson Education, 2003)	• Web/CD activities guided class activities / teacher observation • Formal lab report to assess lab techniques and content knowledge • Study guide • Enrichment activities • Assorted PSSA activities • Quizzes and chapter test • Oral presentation

Science Planned Course
Honors Biology I: Grade 10

Unit: **Ecology**

Content Standard: **Compare and contrast interactions of biotic and abiotic factors.**
Evaluate the efficiency of energy flow.
Describe an element cycle and its role in an ecosystem.

State Curriculum Standard: **4.1.7A Explain the role of the water cycle within a watershed.**
4.6.4B Understand the concept of cycles.
4.6.10A Explain the biotic and abiotic components of an ecosystem and their interactions.
4.6.10B Explain how cycles affect the balance in an ecosystem.
4.6.12A Analyze the interdependence of an ecosystem.

Course Content	Student Performance	Resources	Assessments
A. Ecosystem Structure and Dynamics.	• Read sections 36.8, 34.11, and 36.14 – 36.17 in text • Utilize applicable study guide worksheets • Completion of lab activities on content topics • View and summarize content-related videos • Calculate energy transfer through trophic levels	• Biology: Concepts and Connections (Prentice-Hall, 2006) • Biology: Study Guide (Prentice-Hall, 2006) • Investigating Living Systems (Glencoe, 1994) • Laboratory Investigations for Biology (Pearson Education, 2003) • Instructors guide to text and media (Pearson Education, 2003)	• Web/CD activities guided class activities / teacher observation • Formal lab report to assess lab techniques and content knowledge • Study guide • Enrichment activities • Assorted PSSA activities • Quizzes and chapter test