

Lenoir County Schools  
**Biology Pacing Guide**  
 Revised August 2008

Text: Prentice Hall Biology  
 (2005 NC Edition)  
 Miller/Levine

Day	Objective	Chapter	Section/Topic	Suggested Activities	Teacher Notes
1	1.01 1.03	1 The Science of Biology	What is Biology? <b>1.1 What is science? P. 3-7</b>		
2	1.03 1.05	1 The Science of Biology	<b>1.2 How Scientists Work p. 8-15</b> Designing an Experiment Spontaneous Gen. & Biogenesis Redi, Needham, Spallanzani, Pasteur Hypothesis → Theory		
3	1.02 1.05 2.01	2 The Chemistry of Life	<b>2.1 The Nature of Matter p. 35-39</b> Atoms, Elements, Isotopes, Compounds & Bonds <b>2.2 Properties of Water p. 42-43</b> Acids, Bases, pH	Molecular Attraction Lab (paper clips & water)  Capillary Action demo  pH Lab	
4	2.01	2 The Chemistry of Life	<b>2.3 Carbon Compounds p. 44-48</b> Macromolecules Carbohydrates Lipids Nucleic Acids Proteins	Identifying Unknown Organic Compounds Lab	
5	STRETCH	STRETCH	Use this time to complete activities from Days 1-5.		
6	ASSESS	1-2	Assessment on Material covered from Chapters 1-2.		
7	1.04 2.02 4.01	Chapter 7 Cell Structure and Function	<b>7.1 Life is Cellular p. 169-173</b> Hooke and the Discovery of the Cell Cell Theory (Hooke, Schleiden, Schwann, Virchow)	Microscopes: Examining various types of cells.	

Day	Objective	Chapter	Section/Topic	Suggested Activities	Teacher Notes
8	2.02 4.01	Chapter 7 Cell Structure and Function	<b>7.2 Eukaryotic Cell Structure p. 174-181</b> Prokaryotes v. Eukaryotes Structure and Function of Cell Organelles/Function	Label Diagrams of Prokaryotic Cells, Eukaryotic Cells (Plant v. Animal)  Making Giant Models of Cells in groups	
9	1.02 1.03 2.03	Chapter 7 Cell Structure and Function	<b>7.3 Cell Boundaries p. 182-189</b> Cell Membrane Cell Wall Passive Transport Types of Diffusion Osmosis Active Transport	Diffusion/Osmosis Lab	Other topics here: Homeostasis Movement of materials into and out of the cell
10	2.02	Chapter 7 Cell Structure and Function	<b>7.4 The Diversity of Cell Life p. 190-193</b> Unicellular v. Multicellular Organisms Specialized cells (Form + Function) Levels of Cellular Organization Communication between cells	Microscopes: Another look at prepared slides	
11	ASSESS	ASSESS	Chapter 7 Assessment		
12	2.03 3.01	Chapter 10 Cell Growth and Division	<b>10.1 Cell Growth p. 241-243</b> Limits to Cell Growth Overview of Cell Division <b>10.2 Cell Division p. 244-249</b> Stages of the Cell Cycle	Drawing models of the cell cycle (or constructing them with other materials)	
13	3.01	Chapter 10 Cell Growth and Division	<b>10.3 Regulating the Cell Cycle p. 250-252</b> Internal/External Regulators Uncontrolled Cell Growth/Division and Cancer	Cancer presentations?	
14	3.01	Chapter 12 DNA and RNA	<b>12.1 DNA p. 287-294</b> Griffith—Transformation Avery and DNA Hershey-Chase Experiment	Make a model of DNA, labeling significant parts.	

Day	Objective	Chapter	Section/Topic	Suggested Activities	Teacher Notes
14 cont.	3.01	Chapter 12 DNA and RNA	Structure of DNA Chargaff's Rule Watson and Crick <b>12.2 Chromosomes/DNA Replication p. 295-299</b>		
15	3.01	Chapter 12 DNA and RNA	<b>12.3 RNA and Protein Synthesis p. 300-306</b> RNA Structure mRNA, tRNA, rRNA Transcription/Translation <b>12.5 Gene Regulation p. 309-312</b> Prokaryotic/Euk. Gene Regulators Development and Differentiation	Analyzing Transcription Maps, Reading Codons, etc...	
16	3.02	Chapter 11 Introduction to Genetics	<b>11.4 Meiosis p. 275-278</b> Phases of Meiosis Mitosis v. Meiosis Asexual v. Sexual Reproduction	Models of Meiosis Flow Chart of Asexual v. Sexual Reproduction Exploration Lab p. 281	
17	ASSESS	Chapters 10-12 covered	Assess the material covered from chapters 10-12		
18	3.03	Chapter 11 Introduction to Genetics	<b>11.1 The Work of Gregor Mendel p. 263-266</b> Genes and Dominance Segregation <b>11.2 Probability and Punnett Squares p. 267-269</b>	Practicing Punnett Squares	Basic Squares with one trait
19	3.03	Chapter 11 Introduction to Genetics	<b>11.3 Exploring Mendelian Genetics p. 272-274</b> Beyond Dominant and Recessive Alleles Applying Mendel's Principles Genetics and the Environment	Practicing Punnett Squares	Multiple alleles Polygenic traits Incomplete dominance Codominance
20	3.03	Chapter 11 Introduction to Genetics	Independent Assortment A Summary of Mendel's Principles	Practicing Punnett Squares	Sex-linked traits Test Crosses
21	3.03	Chapter 11	Continue Mendel's Principles	Punnett Squares	Pedigrees

Day	Objective	Chapter	Section/Topic	Suggested Activities	Teacher Notes
22	3.03 3.04	Chapter 11 Introduction to Genetics  Chapter 13 Genetic Engineering	<b>11.5 Linkage and Gene Maps p. 279-280</b> <b>13.1 Changing the Living World p. 319-321</b> Selective Breeding Increasing Variation <b>13.2 Manipulating DNA p. 323-326</b> Genetic Engineering	Analyze Gene Linkage Map p. 280  DNA Fingerprinting	
23	3.04	Chapter 13 Genetic Engineering	<b>13.3 Cell Transformation p. 327-329</b> Transforming Bacteria, Animal, Plant Cells <b>13.4 Applications of Genetic Engineering p. 331-333</b> Transgenic Organisms Cloning	Design and Experiment Lab p. 334-335 (Investigating the Effects of Radiation on Seeds.)	
24	1.02 1.04 3.04	Chapter 13 Genetic Engineering	Lab Day: Experimental Protocols and Analysis with seeds		
25	3.03 4.04	Chapter 14 The Human Genome	<b>14. 1 Human Heredity p. 341-348</b> Sex Chromosomes Pedigree Chart Blood Groups Recessive/Dominant/Codominant Disorders	Quick Lab p. 351 (How is colorblindness transmitted?) Pedigree Projects?	
26	3.03 4.04	Pedigree	Pedigree Projects and Applications		
27	2.04 3.03 3.04 4.04	Chapter 14 The Human Genome	<b>14.2 Human Chromosomes p. 349-353</b> Sex-Linked Disorders Chromosomal Disorders <b>14.3 Human Molecular Genetics p. 355-360</b> Human Genome Project Gene Therapy Ethical Issues in Human Genetics	Real-World Lab p. 361 (Modeling DNA Probes)  Karyotyping Lab	

Day	Objective	Chapter	Section/Topic	Suggested Activities	Teacher Notes
28	STRETCH	STRETCH	Catch up on information from this unit.		
29	ASSESS	Chapters 11, 13, 14	Assess on Chapters 11, 13, 14 (covered material)		
30	3.05	Chapter 15 Darwin's Theory of Evolution	<b>15.1 The Puzzle of Life's Diversity p. 369-372</b> Darwin—HMS Beagle Galapagos Islands <b>15.2 Ideas that Shaped Darwin's Thinking p. 373-377</b> Hutton, Lyell, Lamarck, Malthus <b>15.3 Darwin Presents His Case p. 378-386</b> On the Origin of Species Variation Artificial Selection/Natural Selection Evidence for Evolution	Lab Manual A p. 131 (Comparing Adaptations of Birds)	
31	3.05	Chapter 15 Darwin's Theory of Evolution	(cont. from last class)	Inquiry Activity p. 368 (Do lima beans show variation?)	
32	3.02 3.03 3.05	Chapter 16 Evolution of Populations	<b>16.1 Genes and Variation p. 393-396</b> <b>Gene Pools</b> Sources of Variation Single-gene/Polygenic Traits <b>16.2 Evolution of Genetic Change p. 397-402</b> Types of Natural Selection Genetic Drift Genetic Equilibrium	Lab Manual A p. 137 (Modeling a Gene Pool)	
33	3.02 3.03	Chapter 16 Evolution of Populations	<b>16.3 The Process of Speciation p. 404-410</b> Types of Isolation "Steps" in Speciation	Quick Lab p. 401 (Can the environment affect survival?)  Lab Manual B p. 123 (Modeling Natural	

				Selection)	
Day	Objective	Chapter	Section/Topic	Suggested Activites	Teacher Comments
34	1.03 4.01	Chapter 18 Classification	<b>18.1 Finding Order in Diversity p. 447-450</b> Scientific Names Binomial Nomenclature Carolus Linnaeus	Inquiry Activity p. 446 (How can you classify fruits?)	
35	1.03 4.03	Chapter 18 Classification	<b>18.2 Modern Evolutionary Classification p. 451-455</b> Methods of Modern Classification Molecular Clocks	Quick Lab p. 453 (How is a cladogram constructed?)  Preparing Cladograms	
36	1.03 1.05 4.01	Chapter 18 Classification	<b>18.3 Kingdoms and Domains p. 457-461</b> Differences between protists, fungi, plants, and animals.	Real World Lab p.463 (Classifying Organisms using Dichotomous Keys)  Lab Manual A p. 417 (Constructing a Dichotomous Key)	
37	3.02 3.05 4.01	Chapter 17 The History of Life	<b>17.1 The Fossil Record p. 417-422</b> Fossil Formation Relative/Radioactive Dating Geologic Time Scale <b>17.2 Earth's Early History p. 423-428</b> Early Atmosphere First Organic Molecules Miller and Urey Origin of Life prok/euk cells	Quick Lab p. 420 (What is a half-life?)  Half Life of "Candyum"	
38	3.05	Chapter 17 The History of Life	<b>17.3 Evolution of Multicellular Life p. 429-434</b> Events throughout Geologic Time <b>17.4 Patterns of Evolution p. 435-440</b> Extinction, Adaptive Radiation Covergent Evolution, Coevolution and Punctuated Equilibrium	Geologic Time Lab  Exploration Lab p. 441	

Day	Objective	Chapter	Section/Topic	Suggested Activities	Teacher Notes
39	2.05 3.02 4.01 4.03	Chapter 19 Bacteria and Viruses	<b>19.1 Bacteria p. 471-477</b> <b>19.2 Viruses p. 478-483</b> Viral Structures Lytic v. Lysogenic Reproduction Retroviruses	BioAbstract: AIDS, Ebola  Exploration Lab p. 491 (Identifying Limits to the Growth of Bacteria)	
40	4.01 4.03	Chapter 19 Bacteria and Viruses	<b>19.3 Diseases Caused by Bacteria &amp; Viruses p. 485-490</b>		
41	ASSESS	Chapters 15-19	Assess information taught from Chapters 15-19		
42	REVIEW	REVIEW	Review for 9 weeks test		
43	REVIEW	REVIEW	Review for 9 weeks test		
44	9 WEEKS	9 WEEKS	9 WEEKS TEST		
45	1.02 1.03 1.04 1.05 2.01 2.04 2.05	Chapter 2 The Chemistry of Life	<b>2.4 Chemical Reactions and Enzymes p. 49-53</b> Types of Reactions Types of Cellular Reactions Metabolism, Photosynthesis and CR		
46	1.02 1.03 1.04 1.05 2.01 2.04 2.05	Chapter 2 The Chemistry of Life	Enzymes & Substrates Structure and Function Naming/Recognizing Enzymes	Design a comic showing the role of enzymes	
47	1.02 1.03 1.04 1.05 2.01 2.04 2.05	Chapter 2 The Chemistry of Life	Enzyme Lab Day Measuring Chemical Reactions	Effects of Temperature and pH on Plant and Animal Enzymes using Liver and Potatoes (guidelines on p.54)	

Day	Objective	Chapter	Section/Topic	Suggested Activities	Teacher Notes
48	1.03 2.03 2.05	Chapter 8 Photosynthesis	<b>8.1 Energy and Life p. 201-203</b> Autotrophs and Heterotrophs ATP <b>8.2 Photosynthesis: An Overview p. 204-207</b> Van Helmont, Priestley, Ingenhousz Photosynthesis Equation Light and Pigments	Chromotography Lab  Quick Lab p. 206 (What waste material is produced during Px?)	
49	1.03 2.03 2.05	Chapter 8 Photosynthesis	(cont. from day before)	Lab: How do differences in light color affect photosynthesis?	
50	1.02 1.03 1.05 2.03 2.04 2.05 5.02	Chapter 8 Photosynthesis	<b>8.3 The Reactions of Photosynthesis p.208-214</b> Chloroplasts Electron Carriers Light-Dependent v. Light Independent (Calvin Cycle) Rxns Factors affecting photosynthesis	Design an Experiment p. 215 (Investigating Photosynthesis)  Lab Manual A p. 91 (Measuring the effect of light intensity on Px)	
51		Chapter 8 Photosynthesis	<b>Lab day and discussion</b>		
52	ASSESS	Chapters 2 & 8	<b>Assess Enzymes &amp; Photo. Material</b>		
53	2.03 2.05 5.02	Chapter 9 Cellular Respiration	<b>9.1 Chemical Pathways p. 221-225</b> Overview of Cell. Respiration Glycolysis Fermentation	Problem Solving p. 224 (A Family Recipe)	
54	2.03 2.05 5.02	Chapter 9 Cellular Respiration	<b>9.2 The Krebs Cycle and the Electron Transport Chain p. 226-232</b>	Quick Lab p. 231 (How does exercise affect disposal of wastes from cellular respiration?)	
55	2.03 2.05 5.02	Chapter 9 Cellular Respiration	Differences between Cellular Respiration and Photosynthesis	Creating Charts/Tables for Px and CR	



Day	Objective	Chapter	Section/Topic	Suggested Assignments	Teacher Notes
56		Chapter 9 Cellular Respiration	<b>Lab Day</b>	Real World Lab p. 234-235 (Investigating Fermentation by Making Kimchi)  Go further p. 235	
57	ASSESS	ASSESS	Assess material from Chapter 9		
58	2.05 5.01 5.02	Chapter 3 The Biosphere	<b>3.1 What is Ecology? p. 63-65</b> <b>3.2 Energy Flow p. 67-73</b>	Create food web and illustrate each trophic level.	
59	5.01	Chapter 3 Cycles of Matter	<b>3.3 Cycles of Matter p. 74-80</b>	BioAbstract: The Importance of Nutrient Cycling  Illustrate Cycles	
60	5.01 5.03	Chapter 4 Ecosystems and Communities	<b>4.1 The Role of Climate p. 87-89</b> <b>4.2 What Shapes and Ecosystem? P. 90-97</b> <b>4.3 Biomes p. 98-105</b>	Analyzing Data p. 111 (Ecosystem Productivity)	
61	5.01 5.03	Chapter 4	Biome Project	Biome Project	
62	4.04 5.01 5.03	Chapter 5 Populations	<b>5.1 How Populations Grow p. 119-123</b>	Analyzing Data p. 123 (Population trends)	
63	4.04 5.01 5.03	Chapter 5 Populations	<b>5.2 Limits to Growth p. 124-127</b> <b>5.3 Human Population Growth p. 129-132</b> Factors contributing to growth Changing face of genetics. Disease and population The immune response of the masses	Analyzing population growth in countries outside the U.S.	Also covered: Parasites and toxins
64	5.02 5.03	Chapter 6 Humans in the Biosphere	<b>6.1 A Changing Landscape p. 139-143</b> <b>6.2 Renewable and Non. Resources</b>	Lab Manual A p. 79 (Investigating Air and Water Pollution)	

Day	Objective	Chapter	Section/Topic	Suggested Activities	Teacher Notes
65	5.02 5.03	Chapter 6 Humans in the Biosphere	<b>6.3 Biodiversity p. 150-156</b> Threats to Biodiversity Advantages of Biodiversity <b>6.4 Charting a Course for the Future p. 157-160</b>	Case Study: Medicines, thanks to Biodiversity	
66	ASSESS	Chapters 3-6	Assess material from Chapters 3-6		
67	2.05 3.02 4.01 4.02 4.03 4.04	Chapter 20 Protists	<b>20.1 The Kingdom Protista p. 497-498</b> <b>20.2 Animal-like protists: Protozoans p. 499</b> Types of Protozoans Protistan Diseases	Identify Unknown Protozonas using Key	
68	1.03 3.02 4.01 4.02 4.03	Chapter 20 Protists	<b>20.3 Plant-like Protists: Unicellular Algae p. 506-509</b> <b>20.4 Plant-like Protists: Red, Brown, and Green Algae p. 510-511</b> <b>20.5 Fungus-like Protists p. 516-520</b>	Analyzing Data p. 509 (Fertilizers and Algae)	
69	1.03 1.04 4.02	Chapter 20 Protists	Lab: Identifying Protists under the Microscope	Paramecia, Euglena, Volvox, Stentor, Others...	
70	3.02 4.01	Chapter 21 Fungi	<b>21.1 The Kingdom of Fungi p. 527-529</b> <b>21.2 Classification of Fungi p. 530-536</b> Types of Fung <b>21.3 Ecology of Fungi p. 537-542</b> Fungi's Effect on the Environment		
71	ASSESS	Chapters 20-21	Assess material on Chapters 20-21.		
72	4.01 4.02	Chapter 22 Plant Diversity	<b>22.1 Introduction to Plants p. 551-555</b> <b>22.2 Bryophytes p. 556-559</b> <b>22.3 Seedless Vascular Plants p. 560-563</b>		
73	4.01 4.02	Chapter 22 Plant Diversity	<b>22.4 Seed Plants p. 564-568</b> <b>22.5 Angiosperms p. 569-472</b>		

Day	Objective	Chapter	Section/Topic	Suggested Activities	Teacher Notes
74	2.05 4.02	Chapter 23 Roots, Stems, and Leaves	<b>23.1 Specialized Tissues in Plants p. 579-583</b> <b>23.2 Roots p. 584-585</b> <b>23.3 Stems p. 589-594</b> <b>23.4 Leaves p. 595-598</b> Leaf Structures and Functions <b>23.5 Transport in Plants p. 599-602</b>	Inquiry Activity p. 578 (What parts of plants do we eat?)  Analyzing Data p. 592 (Reading a Tree's History)  Quick Lab p. 601 (What is the role of leaves in transpiration?)	
75	1.02 1.03 4.02 4.03	Chapter 24 Reproduction of Seed Plants	<b>24.1 Reproduction with Cones and Flowers p. 609-616</b> <b>24.2 Seed Development and Germination p. 618-621</b> <b>24.3 Plant Propagation and Agriculture p. 622-626</b>	Quick Lab p.613 (What is the structure of a flower?)  Flower Diagram	
76	4.02 4.03 4.04	Chapter 25 Plant Responses and Adaptations	<b>25.1 Hormones and Plant Growth p. 633-638</b> <b>25.2 Plant Responses p. 639-642</b> <b>25.3 Plant Adaptations p. 643-646</b>		
77	ASSESS	Chapters 22-25	Assessment on Plant Material		
78	2.05 3.02 4.01 4.03 4.04	Chapter 26 Sponges and Cniderians	<b>26.1 Intro. To the Animal Kingdom p. 657-663</b> <b>26.2 Sponges p. 664-667</b> <b>26.3 Cniderians p. 669-675</b>	Biology Interactive CD: Invertebrates	
79	3.02 4.03 4.04	Chapter 27 Worms and Mollusks	<b>27.1 Flatworms p. 683-688</b> <b>27.2 Roundworms p. 689-693</b> <b>27.3 Annelids p. 694-700</b>	Display Preserved Specimens  Earthworm Dissection	
80	3.02 4.01 4.03	Chapter 27 Molluks Chapter 28 Arthropods	<b>27.4 Mollusks p. 701-708</b> Cephalization <b>28.1 Intro. To Arthropods 715-719</b>	Inquiry Activity p. 714 (What is an Arthropod?)	

Day	Objective	Chapter	Section/Topic	Suggested Activities	Teacher Notes
81	2.02 4.01 4.02 4.03	Chapter 28 Echinoderms Chapter 29 Comparing Invertebrates	<b>28.2 Groups of Arthropods p. 720-725</b> <b>28.3 Insects p. 726-733</b> <b>28.4 Echinoderms 734-738</b> <b>29.1 Invertebrate Evolution p. 745-750</b> <b>29.2 Form and Function in Invertebrates p. 751-758</b>	Comparing Arthropods  Display Preserved Specimens  Lab Manual A p. 211 (Comparing Invert. Body Plans)	
82	ASSESS	Chapters 26-29	Assess on Invert. Material		
83	4.02 4.03 4.04	Chapter 30 Nonvertebrate Chordates, Fishes and Amphibians	<b>30.3 Amphibians</b>	Frog Dissection	
84	2.05 4.01 4.03	Chapter 31 Reptiles and Birds	<b>31.1 Reptiles p. 797-805</b> <b>31.2 Birds p. 806-814</b>	Quick Lab p. 811 (How do birds breathe?)  Lab Manual B p. 203C (Comparing Bird Feet and Beaks)	
85	2.03 3.02 4.01 4.03	Chapter 32 Mammals	<b>32.1 Intro to Mammals p. 821-827</b> <b>32.2 Diversity of Mammals p. 828-832</b>	Biology Interactive CD: Diversity of Mammals  Inquiry Activity p. 820 (How are teeth adapted to processing different foods?)	
86	4.01 4.03	Chapter 32 Mammals	<b>32.3 Primates and Human Origins p. 833-841</b>	Quick Lab p. 834 (Is Binocular Vision Useful?)  Lab Man A p. 231 (Comparing Primates)	
87	ASSESS	Chapters 30-32	Assess on Vert. Material		

Day	Objective	Chapter	Section/Topic	Suggested Activities	Teacher Notes
88	4.05	Chapter 34 Animal Behavior	<b>34.1 Elements of Behavior p. 871-876</b> <b>34.2 Patterns of Behavior p. 878-882</b>	Quick Lab p.875 (Types of Learning)	
89	2.02 2.03 2.05	Chapter 35 Nervous System	35.1 Human Body Systems p. 891-896 35.2 The Nervous System p. 897-900 35.3 Division of the Nervous System p. 901-905 35.4 The Senses p. 906-909	Overview of Organ Systems p. 892-893  Identify Structure and Function of a Nerve Cell	
90	FINAL	EXAM	FINAL EXAM		

This Pacing Guide provides you with an idea of how to cover the entire curriculum in time for the Final Exam. Some sections may have been given more time than you want to spend, but you can adapt the time allotted as you see fit (as long as you finish the goals!)