



AP BIOLOGY

CURRICULUM

Middle Township Public Schools

216 S. Main Street

Cape May Court House, NJ 08210

Born On Date: October 18, 2012

MIDDLE TOWNSHIP PUBLIC SCHOOLS
 CAPE MAY COURT HOUSE, NJ 08210
 CURRICULUM GUIDE 2012
 DISCIPLINE: AP BIOLOGY GRADE LEVEL: 9-12

Grade Level Standards		Content/ Cluster	Essential Questions	Time Frame	Activities and Differentiation	Cross Curricular Connections	Assessment/ Benchmark	Resources
Domain	Standard							

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5.1.12 A.a – A.3 (Core concepts, measurements, observations, models)		Nature of Science	How is science studied?	3 weeks	Guided Notes (Pre-Printed)	LA.9-12.RI. PE.H.MS.1.2 (Reading Informational Text)	Oral/Written Responses	Text Book: Reese, Jane et al., <i>Campbell's Biology</i> . 9 th Edition. Benjamin Cummings (2011) <i>AP Biology Investigative Lab Manual: an Inquiry Based Approach</i> (2012)	
5.1.12 B.a – B.4 (mathematical, physical, and computational tools)		Science as a Process	How can an experimental design be created, executed and evaluated?		Inquiry Based Lab Exercises.... Introduction to the Scientific Method		LA.9-12.W. PE.H.MS.1.2 (Writing)		Quizzes
5.1.12 C.a- C.3 (science builds on itself)			Ecology		How do biological systems interact?	Catch and Release Activity (Pennies)			LA.9-12.SL. PE.H.MS.1.2 (Speaking and Listening)
5.1.12 D.a.-D.3 (Critique and Communication)		5.4.12 C.a-C.2 (Ecology- Earth's Composition)			What complex properties do these interactions possess?	#12 (p.145) Behavior Lab	Graded Lab Reports		
5.4.12 G.a-G.7(Ecology – Biogeochemical Cycles & Human Impact)						Animal Behavior	How do humans affect biogeochemical cycles?		
5.3.12B.a- B.3, B.5 (transfer of energy)		What drives animal behavior?			Bottle Ecosystems		Homework		
5.3.12C.a-C.2 (interdependence)									Classical /Operant Conditioning
						Human Pop.Growth			Class Discussions/ Debate
				M&M Chi Square					

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5.1.12 A.a – A.3 (Core concepts, measurements, observations, models)	Nature of Science	How is science studied?	4 weeks	Guided Notes (Pre-Printed)	LA.9-12.RI. PE.H.MS.1.2 (Reading Informational Text)	Oral/Written Responses Quizzes Exam Graded Lab Reports Graphic Organizers Homework Peer Evaluated Lab Report Class Discussions/ Debate	Text Book: Reese, Jane et al., <i>Campbell's Biology</i> . 9 th Edition. Benjamin Cummings (2011) <i>AP Biology Investigative Lab Manual: an Inquiry Based Approach</i> (2012)	
5.1.12 B.a – B.4 (mathematical, physical, and computational tools)	Science as a Process	How can an experimental design be created, executed and evaluated?		Inquiry Based Lab Exercises.... Properties of Water Activity				
5.1.12 C.a- C.3 (science builds on itself)	Bio-Chemistry	How can the structure of a molecule determine its function?		Molecular Modeling	LA.9-12.W. PE.H.MS.1.2 (Writing)			
5.1.12 D.a.-D.3 (Critique and Communication)	Metabolism			Chemistry of Life Lab	LA.9-12.SL. PE.H.MS.1.2 (Speaking and Listening)			
5.2.12.A.a – A.6 (Chem of Life & Properties of Atoms)	Enzymes	How are cellular processes carried out by molecules /enzymes?		#13 (p.153) Enzyme Activity (Peroxidase)				
5.2.12.B.a – B.3 (Substances undergo physical or chemical changes)				Continue Energy Dynamics Lab				
5.3.12A.b – A.2 (Enzymes)								

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5.1.12 A.a – A.3 (Core concepts, measurements, observations, models)	Nature of Science	How is science studied?	5 weeks	Guided Notes (Pre-Printed)	LA.9-12.RI. PE.H.MS.1.2 (Reading Informationa l Text) LA.9-12.W. PE.H.MS.1.2 (Writing) LA.9-12.SL. PE.H.MS.1.2 (Speaking and Listening)	Oral/Written Responses	Text Book: Reese, Jane et al., <i>Campbell's Biology</i> . 9 th Edition. Benjamin Cummings (2011) <i>AP Biology Investigative Lab Manual: an Inquiry Based Approach</i> (2012)	
5.1.12 B.a – B.4 (mathematical, physical, and computational tools)	Science as a Process	How can an experimental design be created, executed and evaluated?		Inquiry Based Lab Exercises....		Quizzes		
5.1.12 C.a- C.3 (science builds on itself)	Cells	How does energy flow between living systems? Between living systems and physical environment?		#4 (p. 51) Diffusion & Osmosis Lab		Exam		
5.1.12 D.a.-D.3 (Critique and Communication)	Cell Processes	What factors affect the cycles?		Exploring Rates of Diffusion Act.		Graded Lab Reports		
5.3.12A.a – A.6 (Cells & Biological Function)		What keeps energy flowing through systems?		Chromatography Lab		Graphic Organizers		
		How do plants convert light energy into sugar?		Photosystems Storyboard		Homework		
5.3.12B.b-B.6 (Food, Energy, Cells, Photosynthesis & Cellular Respiration)	Photo-synthesis	How do organisms break food down to obtain energy?	#5 (p.61) Lab: Photosynthesis	Peer Evaluated Lab Report				
	Cellular Respiration		#6 (p.71) Cell Respiration Lab	Class Discussions/ Debate				
			#11(p.135) Transpiration Lab					

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					Tropisms Activity Leaf Diagram Structure & Func. Leaf Stomata Lab Continue Energy Dynamics Lab			
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5.1.12 A.a – A.3 (Core concepts, measurements, observations, models)	Nature of Science	How is science studied?	2 weeks	Guided Notes (Pre-Printed)	LA.9-12.RI. PE.H.MS.1.2 (Reading Informational Text)	Oral/Written Responses	Text Book: Reese, Jane et al., <i>Campbell's Biology</i> . 9 th Edition. Benjamin Cummings (2011)	
5.1.12 B.a – B.4 (mathematical, physical, and computational tools)	Science as a Process	How can an experimental design be created, executed and evaluated?		Inquiry Based Lab Exercises....				
5.1.12 C.a- C.3 (science builds on itself)	Cell Cycle	How and why do cells divide?		#7 (p.83) Cell Division Lab (caffeine and lectin)				
5.1.12 D.a.-D.3 (Critique and Communication)	Mitosis	What controls cell growth? Cell development?		DNA Modeling				
5.3.12A.c-A.6 (Cellular Processes and Division)	Meiosis and Sexual Life Cycles	How does meiosis result in a great variety of possible gene combinations in the offspring of any two parents?		Cell Cycle Observations				
5.3.12D.c-D.3 (Meiosis)								
					LA.9-12.W. PE.H.MS.1.2 (Writing)	Exam	<i>AP Biology Investigative Lab Manual: an Inquiry Based Approach</i> (2012)	
					LA.9-12.SL. PE.H.MS.1.2 (Speaking and Listening)	Graded Lab Reports		
						Graphic Organizers		
						Homework		
						Peer Evaluated Lab Report		
						Class Discussions/ Debate		

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5.1.12 A.a – A.3 (Core concepts, measurements, observations, models)	Nature of Science	How is science studied?	3 weeks	Guided Notes (Pre-Printed)	LA.9-12.RI. PE.H.MS.1.2 (Reading Informational Text)	Oral/Written Responses	Text Book: Reese, Jane et al., <i>Campbell's Biology</i> . 9 th Edition. Benjamin Cummings (2011)			
5.1.12 B.a – B.4 (mathematical, physical, and computational tools)	Science as a Process	How can an experimental design be created, executed and evaluated?		Inquiry Based Lab Exercises....						
5.1.12 C.a- C.3 (science builds on itself)	Mendelian Genetics	How do living systems retrieve, transmit & respond to info essential to life processes?		Genetics Practice Problems				LA.9-12.W. PE.H.MS.1.2 (Writing)	Exam	<i>AP Biology Investigative Lab Manual: an Inquiry Based Approach</i> (2012)
5.1.12 D.a.-D.3 (Critique and Communication)	Chromosomal Basis of Inheritance	How can the probability of a specific gene being seen in a future population be predicted?		Epigenetics Activity				LA.9-12.SL. PE.H.MS.1.2 (Speaking and Listening)	Graded Lab Reports	
5.3.12D.a – D.3 (Genes)	Molecular Genetics	How are genes inherited?		Chi Square Practice Problems					Graphic Organizers	
				DNA Modeling					Homework	
			Corn Lab - Genetics	Peer Evaluated Lab Report						
					Class Discussions/ Debate					

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5.1.12 A.a – A.3 (Core concepts, measurements, observations, models)	Nature of Science	How is science studied?	4 weeks	Guided Notes (Pre-Printed)	LA.9-12.RI. PE.H.MS.1.2 (Reading Informationa l Text)	Oral/Written Responses	Text Book: Reese, Jane et al., <i>Campbell's Biology</i> . 9 th Edition. Benjamin Cummings (2011) <i>AP Biology Investigative Lab Manual: an Inquiry Based Approach</i> (2012) Supplemental Reading: <i>The Immortal Life of Henrietta Lacks</i> by Rebecca Skloot. New York: Random House, 2011	
5.1.12 B.a – B.4 (mathematical, physical, and computational tools)	Science as a Process	How can an experimental design be created, executed and evaluated?		Inquiry Based Lab Exercises....	LA.9-12.W. PE.H.MS.1.2 (Writing)	Quizzes		
5.1.12 C.a- C.3 (science builds on itself)	Gene to Protein	How do living systems retrieve, transmit and respond to information essential to life processes?		#8 (p.97) Biotechnology: Bacterial Transformation	LA.9-12.SL. PE.H.MS.1.2 (Speaking and Listening)	Exam		
5.1.12 D.a.-D.3 (Critique and Communication)				#9 (p.111) Biotechnology: Restriction Enzyme Analysis of Crime Scene DNA (Gel Electrophoresis)		Graded Lab Reports		
5.3.12 E.a-E.b (New traits)	Regulation of Gene Expression	What regulates gene expression?		Bio-Ethical Debate – HeLa	Protein Synthesis Activity	Graphic Organizers		
5.3.12 A.e – A.5 (Cell Differentiation / Modern Applications)						Bio-technology		What are the bio-ethical concerns often associated with biotechnology?
					Peer Evaluated Lab Report			
					Class Discussions/ Debate			

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					Evolution in a Test Tube Activity Paper Plasmid Mapping Activity			
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5.1.12 B.a – B.4 (mathematical, physical, and computational tools)	Science as a Process	How can an experimental design be created, executed and evaluated?		Inquiry Based Lab Exercises....				
5.1.12 C.a- C.3 (science builds on itself)	Evolutionary Biology and Diversity	How does the process of evolution drive the diversity and unity of life?		#2 (p.25) Mathematical Modeling: Hardy-Weinberg Lab	LA.9-12.W. PE.H.MS.1.2 (Writing)	Exam		
5.1.12 D.a.-D.3 (Critique and Communication)	Darwinian Evolution	What evidence is there to support the Big Bang Theory and the history of life?		Paper Timeline	LA.9-12.SL. PE.H.MS.1.2 (Speaking and Listening)	Graded Lab Reports		
5.3.12E.a – E.4 (Evolution / History of Life)	Origin of Species	What factors permit natural selection?		Cladogram Construction		Graphic Organizers		
5.4.12.A2	History of Life					Homework		
5.4.12.Ba – B3 (History of Earth & Life)	Prokaryotes			#3 (p.41) Comparing DNA Sequences - BLAST Lab		Peer Evaluated Lab Report		
	Phylogeny			Natural Selection Lab with Brine Shrimp		Class Discussions/ Debate		

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					Complete Energy Flow Lab Misconceptions in Evolution – Round Table Discussion			
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5.1.12 B.a – B.4 (mathematical, physical, and computational tools)	Science as a Process	How can an experimental design be created, executed and evaluated?		Inquiry Based Lab Exercises....				
5.1.12 C.a- C.3 (science builds on itself)	Immunity	How does the immune system respond to pathogens?		Immune Response Poster and Play				
5.1.12 D.a.-D.3 (Critique and Communication)				HIV Replication & Transmission Activity				
5.3.12 A.c, A.3, A.f, A.6 (Biological Functions/ Body Systems/ Malfunctions)	Hormones	How is homeostasis maintained?		Homeostasis & Feedback Activity				
	Neurons	How do sensory systems work? What are neurotransmitters and how they are affected by drugs?		Sensory Systems Activity				
			Action Potential Modeling	LA.9-12.W. PE.H.MS.1.2 (Writing)	Exam	Graded Lab Reports	<i>AP Biology Investigative Lab Manual: an Inquiry Based Approach</i> (2012)	
			Neurotransmitters & Drugs Activity	LA.9-12.SL. PE.H.MS.1.2 (Speaking and Listening)	Graphic Organizers	Homework		
						Peer Evaluated Lab Report		
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