Honors Biology I

4110

2008-2009

	Honors Biology I - 4110
Course Description:	This academic course is designed to develop an awareness of life concepts and their relationships to the individual as well as facts of a biological nature that will be practical in everyday living. From the molecular level, to the structure and functions of organisms, biology will be presented in a way which permits the student to understand the living world and their role in it, to solve problems and prepare for future studies. Critical and creative thinking skills will be developed. Biological information will be presented in detail going beyond the scope of the book. Laboratory experience is required of all students.
Grade Level:	9th
Length of Course:	Frequency: 7 periods per 6 day cycle Duration: 42 minute Length: full year course Credits: 1
Prerequisites:	8 th grade teacher recommendation
Textbook:	Biology: The Student of Life, 7 th edition
Expected Level of Achievement	Students will be expected to maintain a 70% or better. They will be required to attend class prepared to learn. The final grade is determined as per school policy and scale: 93-100% = A 85-92% = B 77-84% = C 70-76% = D Below $70\% = F$

			Northern York County School Distri	ict Curriculum	
Course Name:		Honor	Biology		
Content:		Introd	uction to Biology		
Key Learning((s):	Basic	understanding of what life represents		
Essential Ques	tion(s):	How o	do we distinguish living from non-living? How do living t	hings organize and function?	
Grade Level:		9 th			
Number	Number Standard		Student Learning Experiences	Procedures for Assessment	Resources
3.2.10 B 3.2.10A	Apply p knowled and orga technold phenom varied w Apply knowled and understa about th nature o scientifi technold knowled	rocess lge anize ogical ena in /ays lge nding e f c and ogical lge	 Students will describe how existence and life functions of all living things demonstrate both unity and diversity. Students will demonstrate biological tools utilized in scientific investigation. Students will interpret scientific observation and measurement through controlled experiments. Students will learn to relate structural similarities to classification scheme. Students will describe and demonstrate the use of instrumentation. Students will know the characteristics of living things. 	Section reviews Chapter reviews Learning activity "Life Processes" Laboratory investigation "Looking Closely at Living Things" Quiz (written) Microscope demonstration Class participation	Text Construction paper used for drawing Mystery box Compound light microscope
3.2.10C	Apply the element scientifi inquiry solve	ne s of c to	Students will know the functions necessary for life. Students will know diversities in life functions.	Lab practical	

	problems	Students will know various sciences related to biology.	
3.2.10D	Identify and	Students will know how to operate a microscope.	
	apply the		
	technological		
	design		
	process to		
	solve		
	problems		
3.7.10B	Apply		
	instruments		
	and apparatus		
	to examine a		
	variety of		
	objects and		
	processes		

Course Name:	Honor Biology				
Content: Chemistry/Biochemistry					
Key Learning(s):	How o	loes knowledge of basic chemistry relate to chemistry of li	fe		
Essential Question(s):	What	are atoms? How are molecules formed? What are organic	nutrients? How do the nutri	ents differ in structure?	
Grade Level:	9th				
Number Stand	lard	Student Learning Experiences	Procedures for Assessment	Resources	
3.3.12BAnalyze chemica structure function 	e the dl e and i of iings s of ems, k and to is s of to and and	 Students will understand atomic structure, acid base, pH, oxidation reduction Students will understand types of bonds-ionic, covalent, hydrogen, sulfur bridges and van der waal. The role of lipids, protein carbohydrates and nucleic acids in a living thing. Students will construct molecules of organic materials found in living things. 	Laboratory reports Model identification Model practical Group presentations Tests	Laboratory materials Basic text Lecture Exercise/problems	

3.4.12A	Apply		
	concepts		
	about the		
	structure and		
	properties of		
	matter		
3.6.12A	Evaluate and		
	apply		
	biotechnical		
	procedures to		
	complex plant		
	and animal		
	production		
	method		

Course Name: Honor Biology				
Content: Energy flow in biosystems through photosynthesis and respiration				
Key Learning(s):	To un	derstand energy flow in biosystems in various ecosystems		
Essential Question(s):	What transfe	is photosynthesis? How is energy transformed in photosynthesis? and transferred in cellular respiration?	nthesis? What is cellular resp	piration? How is energy
Grade Level:	9 th gra	de		
Number Sta	ndard	Student Learning Experiences	Procedures for Assessment	Resources
 3.3.12B 3.3.12B Evaluation metable activities experised activities experised activities experised and the second activities activities and the second activities activities	ate polic ties using imental ledge of nes mine the nvolved emical ons fy and in ctions g isms fy and be s	 Students will learn the type of endogonic and exergonic reaction in energy transfer. Students will learn the types of cellular respiration and necessity of each to release energy to fuel all living processes. Students will understand and compare glyoslysis and kreb cycle. Students will learn the phases of photosynthesis: light reaction and dark reaction. Students will learn conversion of light energy to a usable chemical form. 	Class participation Tests Quizzes Diagrams Laboratory Group presentations	Tests Worksheets Laboratory materials Videos

	affecting		
	metabolic		
	functions		
	Evaluate the		
3.6.12A	cause and		
	effect and		
	subsequent		
	environmental,		
	economic and		
	societal		
	impacts that		
	result from		
	biomass and		
	biochemical		
	conversion		

Course Name:	ne: Honor Biology			
Content: Cytology				
Key Learning(s):	Studer	nts will learn the unity and diversity found among cells		
Essential Question(s):	Why is unity a	s the cell called "The building unit of life"? What is the u and diversity found cellular functions?	nity and diversity found in ce	ell structure? What is the
Grade Level:	9th			
Number Stand	ard	Student Learning Experiences	Procedures for Assessment	Resources
 3.1.12B Compare contrast several systems could be applied to solve a seproblem 3.1.12C Compare contrast structure function relations as they relations as they relations analyze relations 	e and that to ingle e and e and whips relate ns and the ihip	Students will learn all cells contain components essential for life. Students will learn cell contents leads to cell differentiation. Students will learn functions of organelles with cell. Students will learn variation between eukaryotic and prokaryotic cells. Students will learn various types of movement of materials into and out of cells/active/passive.	Lab reports Lab practical Cell identification Tests Quizzes Group presentations Class participation	Video – Cell Lecture Textbook reading Laboratory materials

	structure and function at the molecular, cellular and organ system		
3.3.12B	level Evaluate relationships between		
	structure and functions of different anatomical parts		

Course Name:	rse Name: Honor Biology				
Content: Human Anatomy and Physiology (Animals)					
Key Learning(s):	What	are the principal systems found in various organisms?		
Essential Ques	tion(s):	What develo	is the relationship between various systems? How do variopment found among various animals?	ous systems function? What	is the evolutionary
Grade Level:		9th			
Number	Stand	lard	Student Learning Experiences	Procedures for Assessment	Resources
3.3.10A	Explain structura function similarit and differen found an living th	the al and al ties ces mong nings	 Students will learn to identify the major structures and functions of the human body and their role in the maintenance of homeostasis. Students will learn to develop an understanding of the interrelationship between the systems of the human body. Students will learn to describe the structure and function of the major organs of the human body. Students will learn to understand that humans are not unique in their performance of the functions necessary to maintain life. 	Lab dissections Discussions Chapter tests Section reviews Chapter reviews Class drawings (each system) Group work Completion of exercises and problems	Mini labs: Nutrition, Transport, Blood/immunity, Gas Exchange, Excretion, Support/Locomotion, Nervous Regulation, Human Nervous System, Chemical Regulation Learning Activity CD-Roms Worksheet

Course Name:	ame: Honors Biology				
Content: Repro		Repro	duction and Development		
Key Learning(s):	To des	scribe how genetic information is inherited		
Essential Ques	tion(s):	What	are the two types of reproduction? How does meiosis prod	duce genetic variation? What	t is random assortment?
Grade Level:		9th			
Number	Stand	lard	Student Learning Experiences	Procedures for Assessment	Resources
3.3.10C	Describe genetic information inherited expressed	e how tion is d and ed	Students will compare and contrast the function of mitosis and meiosis.Students will compare the processes of asexual and sexual reproduction through methods and results.	Lab report Lab practical Test	Text CD-Rom Mitosis
3.3.10C	Distingu different reproduc patterns living th Describe factors affecting frequence populati over tim their consequ	hish t ctive in hings e the g gene cy in a on he and ences	Students will describe the development of plant and animal embryos.Students will illustrate the relationship between eggs, methods of fertilization and stages of embryonic development.Students will explain the hormonal interactions in the human male and female.	QuizDiscussionCompletion of diagramsSection reviewsChapter reviewsSkills developmentEnrichment activity:"Regeneration in Planarir"	Meiosis Mini Lab (mitosis and meiosis) Videotape Worksheets

			Northern York County School Distri	ict Curriculum	
Course Name: Hono			Biology		
Content:		Mende	elian Genetics		
Key Learning(s):	Explai	in why Mendel's work is the basis of genetics?		
Essential Ques	tion(s):	What	are phenotypes and genotypes? What are the Mendelian L	aws of Genetics? What are	blended traits?
Grade Level:		9th			
Number	Stand	lard	Student Learning Experiences	Procedures for Assessment	Resources
3.3.12C 3.3.12C 3.1.12D 3.1.12C	Explain inheritan and expressi the mole level Assess a apply pa Analyze apply measure scales w collectin data Assess patterns	gene nce on at ecular and atterns e and ement then ng	 Students will correlate the pattern of inheritance of genetic characteristics in breeding experiments with the behavior of chromosomes during meiosis and fertilization. Students will use the rules of probability to solve genetic problems. Students will learn to state the rules of inheritance that form the basis of Mendelian genetics. Students will explain why Mendel's work is basis for any subsequent genetic concept. 	Problem solving Term quizzes Test Probability lab Group presentations Class participation	Laboratory materials Textbook Tests Problems Reports
	patterns nature u mathem formula	in sing atical s			

3.1.12E	Analyze how		
	model		
	systems have		
	changes		
	overtime		

Course Name:		Honor Biology					
Content:		Molec	Molecular/Chromosomal Genetics				
Key Learning(s):		How g	How genetic information is passed on the molecular level				
Essential Question(s):		What	What is DNA replication? How are RNA molecules formed? How does protein synthesis relate to gene expression?				
Grade Level: 9		9th	th				
Number	Stand	ard	Student Learning Experiences	Procedures for Assessment	Resources		
3.3.12C 3.3.12C	Analyze expression the mole level Describe roles of nucleic a in cellula reproduct and prote synthesis	gene on at cular e the acids ar etion ein s	 Students will demonstrate knowledge that DNA and ANA control cellular activities. Students will explain how a recent technological use of molecular genetics is affecting the quality of life by allowing man to alter life forms. Students will learn to understand that mutations are the major mechanisms of change in a species as well as causes of defects in an individual. 	Test Quizzes Problem solving Group reports Laboratory activities	Text Problems Laboratory materials Library readings		
3.3.12C 3.3.12C	Describe genetic techniqu applicati and impo Explain	es ons orts birth					
	defects f the stand	rom lpoint					

	of changes in genetic makeup		
3.3.12D	Analyze the theory of evolution		

Course Name: Hon		onor Biology				
Content: Eco		ology				
Key Learning(s): Wh		at are the relationships among organisms and environment?				
Essential Question(s):		hat are the biomes of the earth? How do biomes play a role in the organization in the biospheres?				
Grade Level:	9 th) th				
Number Standard		Student Learning Experiences	Procedures for Assessment	Resources		
4.6.10A Explain biotic an abiotic compon of an ecosyste and thei interacti Identify major bi and exp their similarity and differen Explain energy f a food c	the nd ents em r on the iomes lain ties ces flow in hain e and	 Students will compare the interdependency of organisms and their environment. Students will acquire knowledge of the abiotic factors in the environment. Students will list symbiotic relationship and describe each of them. Students will describe the feeding relationships in an ecosystem in terms of food chains and food webs. 	Chapter test Quiz Section reviews Chapter reviews Group work Completion of exercises and problems Lab work Worksheet: The Biosphere Lab: Radish Plant Growth Lab Report	Textbook CD-Rom: Making a Mini Habitat Videotape: Observing a Food Chain Learning activity Lab equipment Pencil/Paper		

explain how		
organisms		
modify their		
environments		
to sustain		
their needs		