UNIT	SECTION	*LESSON* {TOPICS}	APPROXIMATE TEACHING DATES [PREPARATION DATES]	STUDENT TEACHERS [MAXIMUM NUMBER OF STUDENT TEACHERS]
(1) Fundamental Science Skills	XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXX

(2) Ecology	**The Biosphere and Biological Systems**	**Introduction and Overview**
		{
		• Layers/Structure of the Biosphere (Hierarchy of Biological Organization);
		• Basic chemistry review and properties of water;
		}
			September 18 - 19
			
			[September 17 - 18]
				• NONE (Mr. Bursch ONLY)
				
				[2]

		Biogeochemical cycles
		{
		• Water (hydrological) Cycle;
		• Carbon Cycle;
		• Nitrogen Cycle;
		• Phosphorus Cycle;
		• Sulfur Cycle;
		}
			September 20 - 21
			
			[September 19 - 20]
				• NONE (Mr. Bursch ONLY)
				
				[2]

	Interactions and Evolution	**The Ecosystem and Energy Flow**
		{
		• Biotic and Abiotic Factors;
		• Climate and Weather;
		• Food Chains and Food Webs;
		• Ecological Pyramids (Energy, Biomass, and Numbers)
		}
			September 24 - 28
			
			[September 21 - 25]
				•
				
				[2]

		Community Ecology
		{
		• Community Interactions: Predation, Competition, Mutualism, Parasitism, Commensalism, Amensalism, and Neutralism
		}
			October 8 - 10
			
			[September 25 - 29]
				•
				
				[2]

		Population Ecology
		{
		• Population Characteristics;
		• Population Dynamics;
		• Demography
		}
			October 11 - 12
			
			[September 25 - 29]
				•
				
				[2]

		Humanity's Impact on the Biosphere
		{
		• Man-made Changes (Pollution) to the Biosphere and the Impacts of these Alterations on Ecosystems;
		• Using Ecology to Restore, Protect, and Enhance the Integrity of Ecosystems and the Biosphere
		}
			October 15 - 19
			
			[October 12 - 13]
				•
				
				[2]

(3) Introduction to Cells	**Introduction to Biological Systems**	**Characteristics of Life** { • Characteristics of Living Things; • Hierarchy of Biological Organization;	October 22 - 26 [October 16 - 20]	• [2]

		• Basic chemistry review and properties of water; }		

	Biomolecules and Biochemistry	**Biomolecules and Macromolecules**
		{
		• Recognizing, Identifying/Classifying, and Modeling Biomolecules;
		• Carbohydrates;
		• Lipids;
		• Proteins;
		• Nucleic Acids
		}
			October 29 - October 31
			
			[October 23 - 27]
				•
				
				[2]

		Enzymes
		{
		• Chemical Reactions and Rates;
		• Catalysts and Specific Enzyme Examples;
		• Mechanisms of Enzymes;
		• Factors Affecting Enzyme Reaction Rates;
		}
			November 1 - 2
			
			[October 30 - November 1]
				•
				
				[2]

		Biomolecules and Your Health { • Informed Eating: Using Knowledge of Biomolecules and Biochemistry, General Physiology, and Your Own Body and Lifestyle to Make	November 5 - 7 [November 1 - 3]	• [2]

		Health-Improving Food Choices; ● Reading and Deciphering Food Labels; }		

	Cell Theory, Prokaryotes, and Eukaryotes	**Cell Theory**
		{
		● Discovery of Cells;
		● Compartmentalization and Gradients;
		● Light Microscopy Basics;
		}
			November 8 - 9
			
			[November 6 - 8]
				●
				
				[2]

		Prokaryotic Cells and Eukaryotic Cells
		{
		● Characteristics Prokaryotes and Eukaryotes;
		● Animal Cells vs. Plant Cells;
		}
			November 12 - 14
			
			[November 9 - 10]
				●
				
				[2]

	Cell Organelles	**Organization of the Eukaryotic Cell**
		{
		● Compartmentalization: (Creating Separate Spaces within Spaces to Allow for Biochemical Diversity and Stability);
		● The Cell Membrane;
		● Names, Structures, and Functions of Cellular Organelles
		}
			November 15 - 16
			
			[November 13 - 15]
				● Adriana Snyder
				● Elise Patellaro
				
				[2]

	Cell Transport	**Movement of Materials Through Biological Membranes**
		{
		• Detailed Structure of the Cell Membrane;
		• Passive Transport (Simple Diffusion, Osmosis, and
		• Facilitated Diffusion) vs. Active Transport (Protein Pumps; Exocytosis and Endocytosis);
		• Electrical and Chemical Gradients;
		• Hypertonicity, Isotonicity, and Hypertonicity;
		}
			November 19 - 21
			
			[November 16 - 17]
				•
				
				[2]

(4) Major Cell Processes	**Photosynthesis**	***Energy and Life***
		{
		• Autotrophs and Heterotrophs;
		• Chemical Energy and ATP;
		• ATP and Glucose
		}
			November 26 - 28
			
			[November 20 - 22]
				•
				
				[2]

		Photosynthesis Overview
		{
		• Introduction to and Overview of Photosynthesis;
		• The Photosynthesis Equation;
		• Light and Pigments
		}
			November 28 - November 30
			
			[November 27 - 29]
				•
				
				[2]

		The Reactions of Photosynthesis
		{
		• Inside of a Chloroplast;
		• NADPH;
		• Light-Dependent Reactions;
		• Light-Independent Reactions (The Calvin Cycle);
		• Factors Affecting Photosynthesis
		}
			December 3 - 5
			
			[November 29 - December 1]
				•
				
				[2]

	Cellular Respiration	***Chemical Pathways***
		{
		• Chemical Energy and Food;
		• Overview of Cellular Respiration;
		• Glycolysis;
		• Fermentation
		}
			December 6 - 7
			
			[December 4 - 6]
				•
				
				[2]

		The Krebs (Citric Acid) Cycle and Electron Transport
		{
		• The Krebs (Citric Acid) Cycle;
		• Electron Transport;
		• The (Chemical and Energy) Totals;
		• Energy and Exercise;
		• Comparing Photosynthesis and Cellular Respiration
		}
			December 10 - 14
			
			[December 7 - 8]
				•
				
				[2]

	Cell Growth and Division	***Cell Growth and Cell Division***
		{
		• Limits to Cell Growth;
		• Chromosomes;
		• The Cell Cycle;
		• Events of the Cell Cycle;
		• Mitosis;
		• Cytokenesis
		}
			January 8 - 11
			
			[January 8]
				• NONE (Mr. Bursch ONLY)
				
				[2]

		Regulating the Cell Cycle
		{
		• Controls on Cell Division;
		• Cell Cycle Regulators;
		• Uncontrolled Cell Growth
		}
			January 14 - 18
			
			[January 9 - 12]
				•
				
				[2]

(5) Nucleic Acids (DNA, RNA, and the "Central Dogma" of Molecular Biology)	**DNA Structure**	***DNA and RNA***
		{
		• Griffith and Transformation;
		• Avery and DNA;
		• The Hershey-Chase Experiment;
		• The Nucleotide
		}
			January 22 - 25
			
			[January 16 - 19]
				•
				
				[2]

	DNA Replication	***Chromosomes and Replication***
		{
		• DNA and Chromosomes;
		• DNA Replication;
		}
			January 28 - 30
			
			[January 22 - 24]
				•
				
				[2]

	"Central Dogma" of Molecular Biology	***RNA and Protein Synthesis*** {	February 1 - February 6	•

	(Information Flow between Biomolecules)	• The Structure of RNA; • Types of RNA; • Transcription; • RNA Editing; • The Genetic Code; • Translation; • The Roles of RNA and DNA; • Genes and Proteins; }	[January 24 - 26]	[2]

	DNA Mutations and Gene Regulation	***Mutations***
		{
		• Introduction;
		• Gene Mutations;
		• Chromosomal Mutations;
		}
		
		Gene Regulation
		{
		• Introduction;
		• Examples;
		• Eukaryotic Gene Regulation;
		• Regulation and Development;
		}
			February 7 - 8
			
			[January 29 - February 2]
				• Mia Peres
				• Justin Morales
				
				[2]

(6) Genetics	**Meiosis**	***Meiosis***
		{
		• Chromosome Number;
		• Phases of Meiosis;
		• Gamete Formation;
		• Comparing Mitosis and Meiosis;
		}
			February 11 - 15
			
			[February 5 - 9]
				•
				
				[2]

	Foundations of Modern Genetics	***The Work of Gregor Mendel*** { • Mendel's Pea Plants;	February 25 - March 1 [February 12 - 16]	• Charlie Arpan [3]

		• Genes and Dominance; • Segregation; • Genetics and Probability; • Punnett Squares; • Probability and Segregation; • Probabilities Predict Averages; }		

	Patterns of Heredity and Advanced Punnett Squares	***Exploring Mendelian Genetics***
		{
		• Independent Assortment;
		• A Summary of Mendel's Principles;
		• Beyond Dominant and Recessive Alleles;
		• Applying Mendel's Principles;
		}
		
		Gene Linkage and Gene Maps
		{
		• Gene Linkage;
		• Gene Maps
		}
			March 4 - 8
			
			[February 26 - March 2]
				•
				
				[3]

	The Human Genome	***The Human Genome and Human Heredity*** { • Human Chromosomes; • Human Traits;	March 11 - 15 [March 5 - 9]	• [3]

		• Human Genes;
		• From Gene to Molecule
		}
		
		Human Chromosomes
		{
		• Human Genes and Chromosomes;
		• Sex-Linked Genes;
		• X-Chromosome Inactivation;
		• Chromosomal Disorders
		}
		
		Human Molecular Genetics
		{
		• Human DNA Analysis;
		• Human Genome Project;
		• Gene Therapy;
		• Ethical Issues in Human Genetics;
		}		

(7) Evolution	**Darwin's Ideas on Evolution (Including an Overview of the General Concept of Evolution)**	***The Puzzle of Life's Diversity***
		{
		• Introduction;
		• Voyage of the Beagle;
		• Darwin's Observations;
		• The Journey Home;
		}
		
		Ideas that shaped Darwin's Thinking
		{
			March 18 - 22
			
			[March 12 - 16]
				•
				
				[3]

		• An Ancient, Changing Earth;
		• Lamarck's Theory of Evolution;
		• Populations Growth
		}
		
		Darwin Presents His Case
		{
		• Publication on the Origination of Species;
		• Natural Variation and Artificial Selection;
		• Evolution by Natural Selection;
		• Darwin's Theory of Evolution;
		• Evidence of Evolution;
		• Summary of Darwin's Theory;
		}		

	Evolution of Populations	***Genes and Variation***
		{
		• Darwin's Ideas Revisited;
		• Gene Pools;
		• Sources of Genetic Variation;
		• Single-Gene and Polygenic Traits;
		}
		
		Evolution as Genetic Change
		{
		• Natural Selection on Single Gene Traits;
			March 25 - 29
			
			[March 19 - 23]
				•
				[3]

		• Natural Selection on Polygenic Traits;
		• Genetic Drift;
		• Evolution Versus Genetic Equilibrium;
		}
		
		The Process of Speciation
		{
		• Introduction;
		• Isolating Mechanisms;
		• Testing Natural Selection in Nature;
		• Speciation in Darwin's Finches
		}		

	The History of Life on Earth	***The Fossil Record***
		{
		• Fossils and Ancient Life;
		• How Fossils Form;
		• Interpreting Fossil Evidence;
		• Geologic Time Scale;
		}
		
		Earth's Early History
		{
		• Formation of Earth;
		• The First Organic Molecules (and Biomolecules);
		• How Did Life Begin?;
		• Free Oxygen;
		• Origin of Eukaryotic Cells;
			April 1 - 5
			
			[March 26 - 30]
				•
				
				[3]

		• Sexual Reproduction and Multicellularity;
		}
		
		Evolution of Multicellular Life
		{
		• Precambrian Time;
		• Paleozoic Era;
		• Mesozoic Era;
		• Cenozoic Era;
		}
		
		Patterns of Evolution
		{
		• Introduction;
		• Mass Extinctions;
		• Adaptive Radiations;
		• Convergent Evolution;
		• Coevolution;
		• Punctuated Equilibrium;
		• Developmental Genes and Body Plans
		}		

(8) Human Body and Health	**Basic Anatomy and Physiology**	***Human Body Systems***
		{
		• Overview;
		• The Nervous System;
		• The Endocrine System;
		• The Digestive System
		}
			April 15 - 19
			
			[April 7-11]
				•
				
				[2]

	Drugs and Substance Abuse	***Alcohol*** { • Immediate Physical Effects;	April 22 - 26 [April 16 - 23]	• [3]

		• Health Effects of Long-Term Abuse;
		}
		
		Marijuana
		{
		• Immediate Physical Effects;
		• Health Effects of Long-Term Abuse;
		}
		
		Tobacco
		{
		• Immediate Physical Effects;
		• Health Effects of Long-Term Abuse;
		}		

	Reproduction and Reproductive Systems Health	***Human Reproduction***
		{
		• Human Reproductive Systems;
		• Intercourse and Fertilization;
		• Pregnancy and Birth;
		• Contraception
		}
		
		Sexually Transmitted Infections and Other Sexual Health Concerns
		{
		• What Are STIs?;
		• How are STIs Transmitted and How Can They Be Treated/Prevented?;
		• HIV/AIDS
		}
			TBD
			
			[N/A]
				• Planned Parenthood