Mt. Zion High School Curriculum Map

Name: Neysa Downs Department: Science Subject: Advanced Placement Biology

Quarter	Essential Skills	Strategies and Activities	CC Standards	Assessments
1	**GOAL 1.** Students will use the scientific process to solve problems. This may include generating hypotheses, designing meaningful experiments, controlling variables, gathering relevant data, interpreting results, and drawing conclusions.	All AP Lab Investigations Required (#1-13)	LS1.1-6 LS2.1-8 LS4.1-6	Homework Lab reports Exams
	Objective 1a: Students will generate hypotheses, complete experiments, analyze data, and develop conclusions regarding a number of scientific concepts including; ecology, evolution, microscopy, organic compounds, enzyme activity, organism and populations.	Microscope Lab Measurement Lab AP Lab #2-Populations (Hardy-Weinberg) using Excel spreadsheets AP Lab #10 – Dissolved Oxygen & Net Primary Productivity AP Lab #12 – Animal Behavior (Termites & Pheromones)		
	Objective 1b: Students will be able to explain the central dogma of molecular biology and to apply this concept by generating an amino acid sequence from a DNA sequence.	AP Lab #3-Comparing DNA sequences using BLAST	LS3.1 LS3.2 LS1.1	
2	**GOAL 2.** Students will use problem solving, analytical and critical thinking skills to solve basic problems in biology including traditional genetics, molecular genetics, microbiology, and others.	AP Lab #8 & 9 – Molecular Biology (Electrophoresis & Transformation) AP Lab #13 – Enzymes & Organic Molecules	LS1.1-6 LS3.1-3	
	Objective 2a: Students will describe the scientific method and apply it to answer a question relevant to their own lives.	All AP Lab Investigations Required (#1-13)		

	Objective 2b: The student will be able to make a prediction about the interactions of subcellular organelles, construct explanations based on scientific evidence as to how interactions of subcellular structures provide essential functions, use representations and models to analyze situations qualitatively to describe how interactions of subcellular structures, which possess specialized functions, provide essential functions Objective 2c: Students will be able to differentiate between animal diversity, molecules and cells, and Cellular Structure and Function.	AP Lab #4 – Osmosis & Diffusion Biodiversity Lab	LS1.2 LS3.3 LS4.2 PS1.1 LS1.1-4 LS1.6 ETS1.1 ETS1.2 ETS1.4	
3	**GOAL 3.** Students will be able to explain and apply the fundamental principles of biology chemistry, or physics. Objective 3a: Students will explain modern lab techniques used in molecular genetics and explain the uses for these procedures. Objective 3b: Students will be able to explain how light energy is converted to chemical energy through photosynthesis and describe the chemical reactions involved in this process. Also, examine how cells communicate. Objective 3c: Students will be able to describe the process of cellular respiration and trace ATP production	AP Lab #7 – Affects of lectin on cell division AP Lab #8-Biotechnology: Bacterial Transformation AP Lab #9 –Biotechnology: Restriction Enzyme Analysis of DNA AP Lab # 6 – Cellular Respiration AP Lab #5 - Photosynthesis	LS1.1-7 LS3.1-2 LS4.1-6	

	during the metabolism of glucose to carbon dioxide and water. Objective 3d: Students will describe the process of cell division and explain how mistakes during this event can lead to cellular abnormalities. Also, look at DNA & Heredity			
4	**GOAL 4.** Students will demonstrate an ability to critically interpret the scientific work of others. This includes the ability to read and interpret data, understand graphic representations, interpret basic mathematical and statistical arguments, detect invalid arguments and know when and how to access authoritative information from reliable sources. Objective 4a: The student is able to analyze data that indicate how organisms exchange information in response to internal changes and external cues, and which can change behavior, create a representation that describes how organisms exchange information in response to internal changes and external cues, and which can result in changes in behavior, be able to describe how organisms exchange information in response to internal changes or environmental cues.	AP Lab #11 – Transpiration	LS1.1-7 LS2.1-8 LS3.1-3	

	Objective 4b: The student is able to construct an explanation, based on scientific theories and models, about how the human body systems detect external and internal signals, transmit and integrate information, and produce responses.	Determining Blood Pressure & Heart Rate		