

Course: Biology Honors**Unit 1: Biology Basics**

Learning Objectives	Determination of Evidence	Transferability
<p><i>Student will be able to...</i></p> <ul style="list-style-type: none">- Define science.- Give an example of a hypothesis in the correct format.- Explain the relationship between independent and dependent variables within a hypothesis.- Explain the difference between an observation and an inference.- Explain the difference between accuracy and precision.- Explain the difference between a fact, principle, hypothesis, theory, and law.- List the components of the scientific method and show how those translate into the components of a lab report.- Give an example of a scientific investigation design, with appropriate constants and variables (IV and DV)- Be able to conduct a scientific experiment.- Be able to organize data from an experiment in a chart, table, or graph and interpret it.- Analyze data with respect to a hypothesis and draw an appropriate conclusion.- Be able to select the most appropriate hypothesis given the description of a scientific investigation.- Identify constants and variables given a description of a scientific investigation.- Describe the three components of that make up the structure of the atom, including their charge and specific locations within the atom.- List the six elements necessary for life.- Explain the difference between periods and groups and what each tells you about the atom.- Explain why elements tend to form bonds in compounds. Then describe the three main types of bonds.- List the levels of organization that make up an organism.- Explain the difference between polar and nonpolar molecules.- Explain the five properties that make water such a unique molecule.- Describe the difference between hydrophilic and hydrophobic substances.- List the monomers and polymers of carbohydrates, lipids, proteins, and nucleic acids. Include which elements compose each macromolecule.- Explain the major functions of each macromolecule.- Provide an example for each type of macromolecule.- Compare the relative energy storage of carbohydrates, lipids, and proteins.- List the order in which the body will consume carbohydrates, lipids, and proteins for energy, and explain why.- Explain the process of polymerization – both the forming of polymers, through dehydration, and the breaking of polymers, through hydrolysis.- Explain the structure, location, and purpose of phospholipids.	<p><i>The following assessments will provide evidence of student learning:</i></p> <p><u>Classwork/Labs:</u></p> <ul style="list-style-type: none">- Lab Stations: Safety and Equipment- Lab Stations: Measurement- Lab Stations: Chemistry Practice- Practice: Understanding Hypotheses- Practice: Scientific Method- Lab: An Investigation of Sanitizers and Soaps- Lab: Murder and a Meal- Lab: Macromolecule Diet and Exercise Online Simulation <p><u>Homework:</u></p> <ul style="list-style-type: none">- Concepts 1-3 Study Guides <p><u>Tests:</u></p> <ul style="list-style-type: none">- Unit 1: Concepts 1-3 <p><u>Projects/Reports:</u></p> <ul style="list-style-type: none">- Hand Sanitizer/Soap Lab Formal Lab Report (optional)	<p><i>Next Generation Science Standards by NSTA:</i></p> <p>HS-LS1-2 HS-LS1-6</p>

Day	Learning Objectives	Methods/Activities	Assessments	Homework	NSTA Standards
1	Introduction/Course Expectations; Introduction to Scientific Method	-Course Expectations/Procedures -Lab Stations: Safety and Equipment p.2-3 (go over after)	-Informal questioning and discussion, draw names to go over stations		
2	Scientific Method	-Finish going over stations (if needed) -Concept 1 Notes p.4-5 (slides 1-11) -Lab Stations: Measurement p.8, finish conversion for HW if not in class	-Informal questioning and discussion	-Work on Concept 1 SG -Finish conversions on p.8	
3	Scientific Method	-Go over p.8 -Concept 1 Notes p.5 (slides 12-15) -Practice: Understanding Hypotheses p.9 -Concept 1 Notes p.6 (slides 16-19)	-Informal questioning and discussion, draw names to go over stations	-Work on Concept 1 SG	
4	Scientific Method	-PB and J procedures Demo -Practice: Scientific Method p.10 -Introduce Lab: An Investigation of Hand Sanitizers and Soaps p.11	-Informal questioning and discussion	-Work on Concept 1 SG	
5	Scientific Method	-Set up Lab p.11-13	-Informal questioning and discussion	-Work on Concept 1 SG	
6	Scientific Method	-Finish Concept 1 Notes p.6-7 (slides 20-21) -Discuss and set-up data tables and graphs for lab on p.13-14 -Work on Concept 1 SG (if time)	-Informal questioning and discussion	-Work on Concept 1 SG	
7	Chemistry of Life	-Collect Concept 1 SG -Concept 2 Notes p.17-19 (as many slides as you can get through – hopefully 1-20)	-Concept 1 SG -Informal questioning and discussion	-Work on Concept 2 SG	HS-LS1-2
8	Chemistry of Life and Water Properties	-Count bacteria colonies and collect class data for Sanitizer/Soap Lab -Finish Concept 2 Notes p.19-23 (slides 21-39)	-Informal questioning and discussion	-Finish Analysis and Conclusion for lab on p.15-16	HS-LS1-2
9	Chemistry of Life and Water Properties	-Turn in Sanitizer/Soap Lab p.12-16 -Finish Concept 2 Notes (if you didn't day 8) -Lab Stations: Chemistry Basics p. 24-25, collect and grade or go over	-Sanitizer/Soap Lab -Informal questioning and discussion	-Work on Concept 2 SG	HS-LS1-2
10	Macromolecules	-Collect Concept 2 SG	-Concept 2 SG	Work on Concept 3	HS-LS1-2

		-Concept 3 Notes p.26-29	-Informal questioning and discussion	SG	HS-LS1-6
11	Macromolecules	-Lab: Murder and a Meal p.30-33	-Informal questioning and discussion	-Work on Concept 3 SG	HS-LS1-2 HS-LS1-6
12	Macromolecules	-Finish Lab: Murder and a Meal p.30-33 and turn in -Work on Concept 3 SG (if time)	-Lab: Murder and a Meal	-Work on Concept 3 SG	HS-LS1-2 HS-LS1-6
13	Macromolecules	-Collect Concept 3 SG -Lab: Macromolecule Diet and Exercise Online Simulation p.34-36	-Concept 3 SG -Informal questioning and discussion	-Study for test	HS-LS1-2 HS-LS1-6
14	Macromolecules	-Finish Lab: Diet and Exercise Simulation p.34-36 and turn in	-Lab: Diet and Exercise Simulation	-Study for test	HS-LS1-2 HS-LS1-6
15	Review	-Review	-Informal questioning and discussion	-Study for test	HS-LS1-2 HS-LS1-6
16	Test	-Unit 1 Test	-Unit 1 Test		HS-LS1-2 HS-LS1-6