

INSTRUCTIONAL UNIT: Cells	PLANNED INSTRUCTION (COURSE) Honors Biology		ESTIMATED TIME: 45 Days
CONTENT STANDARD(S) OBJECTIVES	PERFORMANCE STANDARDS (COURSE CONTENT)	PERFORMANCE STANDARDS (STUDENT ACTIVITIES)	ASSESSMENT AND SCORING GUIDE(S) OF CONTENT STANDARD(S)
<p>3.1 .10A Discriminate among the concepts of systems, subsystems, feedback and control in solving technological problems.</p> <ul style="list-style-type: none"> Identify the function of subsystems within a larger system (e.g., role of thermostat in an engine, pressure switch). Describe the interrelationships among inputs, processes, outputs, feedback and control in specific systems. Explain the concept of system redesign and apply it to improve technological systems. Apply the universal systems model to illustrate specific solutions and troubleshoot specific problems. Analyze and describe the effectiveness of systems to 	<ol style="list-style-type: none"> Compare and contrast ionic, covalent and hydrogen bonding. Describe how energy changes are involved in chemical reactions . Explain how enzymes affect chemical reactions in organisms. Explain how the properties of water allow for functioning as a universal solvent in living systems. Identify how the process of diffusion and osmosis occurs and why it is important to cells. Explain the importance of concentration gradients in living systems. Compare the chemical structures of carbohydrates, lipids, proteins and nucleic acids, and relate their 	<ol style="list-style-type: none"> Activity- Electron configuration and bonding(candy models) Demonstration – Chemical reactions - release of heat Activity – Enzyme-mediated reaction <p>Lab – Enzyme (Catalase</p> <ol style="list-style-type: none"> Demonstration- Floating paperclips Demonstration – Dye, air freshener diffusion. <p>Lab – Osmosis across egg membrane.</p> <p>- 7. Lab – Tests for Organic Compounds</p>	<p>Activity – Candy Models</p> <p>Student Demonstration – Energy Change</p> <p>Enzymes – analysis questions</p> <p>Lab- Enzymes- Lab Report</p> <p>Lab Report – Osmosis/Egg</p>

<p>solve specific problems.</p> <p>3.2 .10A Apply knowledge and understanding about the nature of scientific and technological knowledge.</p> <ul style="list-style-type: none"> • Compare and contrast scientific theories and beliefs. • Know that science uses both direct and indirect observation means to study the world and the universe. • Integrate new information into existing theories and explain implied results. <p>3.2 .10 B Apply process knowledge and organize scientific and technological phenomena in varied ways.</p> <ul style="list-style-type: none"> • Describe materials using 	<p>importance to living organisms.</p> <ol style="list-style-type: none"> 8. Explain how dehydration synthesis and hydrolysis allow living organisms to function. 9. State the cell theory. 10. Explain why surface to volume ratio limits cell size. 11. Describe the relationship between cell shape and cell function. 12. Describe the structure, composition and function of the cell membrane. 13. Distinguish between passive and active transport mechanisms. 14. Compare and contrast endocytosis and exocytosis. 15. Compare and contrast the structural differences of prokaryotic and eukaryotic cells. 16. Identify the structure and describe the function of organelles of eukaryotic cells. 17. Compare and contrast plant and animal cells. 	<p>- Lab 6-1</p> <ol style="list-style-type: none"> 9. Lab – Biogenesis vs. Abiogenesis 10. Lab – Potato (8.1) 11. Lab – Structure and Function of Cells 12. On-Line Tutorial – Cell Membrane Construction www.wisc-online.com Osmosis/Diffusion Lab – Sugar,Starch,Iodine 15. Lab – Use of the Compound light Microscope – 7-1,7-2 16. On-Line Tutorial – Organelle Functioning – wisc online Activity – Cell Modeling/Analogy Formation 17. Lab - Observation of Wet Mount Cheek and Leaf Cells 18. Lab – Earthworm Dissection 21. Lab – Kinesthetics and Inquiry of Photo/Resp- 	<p>Lab Report – Tests for Organic Compounds</p> <p>Examples of each kind of reaction.</p> <p>Analysis/Conclusions – Lab (Abiogenesis/Biogenesis)</p> <p>Critical Thinking – Potato Lab</p> <p>Lab – Potato - Lab Report</p> <p>Drawings/Analysis/Conclusions – Lab-Cell Structure and Function</p> <p>Cell Membrane Construction – Label Diagram/Questions Osmosis Lab - Lab Report</p> <p>Lab Practical – Demonstration of Microscope Use</p>
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<p>precise quantitative and qualitative skills based on observations.</p> <ul style="list-style-type: none"> • Develop appropriate scientific experiments: raising questions, formulating hypotheses, testing, controlled experiments, recognizing variables, manipulating variables, interpreting data, and producing solutions. • Use process skills to make inferences and predictions using collected information and to communicate, using space / time relationships, defining operationally. <p>3.3 .10A Explain the structural and functional similarities and differences found among living things.</p>	<ol style="list-style-type: none"> 18. Identify the heirarchical levels of cellular organization. 19. Expalin why organisms need a supply of energy. 20. Describe how energy is stored and released by ATP. 21. Relate the structure of chloroplasts to the events in photosynthesis. 22. Compare and contrast cellular respiration and fermentation 23. Compare and contrast lactic acid and alcoholic fermentation. 24. Relate the structure of the mitochondria to the process of cellular respiration. 	<p>nsta.com</p> <p>Demonstration – Photosynthesis – newtons apple.tv</p> <p>23. Lab – Yeast /CO2 Production(Breadmaking)</p>	<p>Cell – Label Diagram (Plant and Animal)</p> <p>Matching – Structure to Function</p> <p>Cell Model – ID Structure and Function and Compose Analogy</p> <p>Lab Drawings w/ labels</p> <p>Venn Diagram – Plant vs. Animal</p> <p>Dissection Questions</p> <p>Earthworm/Human Anatomy and Physiology Comparison</p> <p>Flow Chart – Events of Photosynthesis</p> <p>Lab-Photo/Resp – Questions</p> <p>Demonstration – Photo – Observations</p> <p>Venn Diagram – Aerobic cellular respiration vs. Fermentation</p> <p>Flow Chart – Aerobic Respiration</p> <p>Lab – Observations/Questions</p> <p>Unit Exam – Cells (Multiple Choice/Essay)</p>
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- Identify and characterize major life forms according to their placement in existing classification groups.
- Explain the relationship between structure and function at the molecular and cellular levels.
- Describe organizing schemes of classification keys.
- Identify and characterize major life forms by kingdom, phyla, class and order.

3.3 .10B Describe and explain the chemical and structural basis of living organisms.

- Describe the relationship between the structure of organic molecules and the function they serve in living organisms.

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| <ul style="list-style-type: none">• Identify the specialized structures and regions of the cell and the functions of each.• Explain how cells store and use information to guide their functions.• Explain cell functions and processes in terms of chemical reactions and energy changes. | | | |
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