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|---------------------------------|-----------------------------------|----------------------------------|--|
| <b>Planned Course: Biology</b>  | <b>Course Number: S401</b>        | <b>Department: Science</b>       |  |
| <b>Unit: Cells and Genetics</b> | <b>Grade Level: 9 - 10</b>        |                                  |  |
| <b>Estimated Time: 45 days</b>  | <b>Level/Track: College Prep.</b> | <b>Date Approved: 08/22/2016</b> |  |

| <b>PA Academic Standards</b> | <b>Core Concepts (in question format)</b><br>• Skills/Knowledge | <b>Activities/Strategies/Study Skills</b><br>(identify some activities as remedial or enrichment activities) | <b>Assessments</b><br>(include types and topics) |
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| <ul style="list-style-type: none"> <li>▶ Bio.B.3.3.1               <ul style="list-style-type: none"> <li>• 3.1.BA9</li> </ul> </li> <li>▶ Bio.A.3.2.1               <ul style="list-style-type: none"> <li>• 3.1.B.A2</li> <li>• 3.1.B.A5</li> <li>• 3.1.C.A1</li> <li>• 4.1.10.C</li> </ul> </li> <li>▶ Bio.A.3.2.2               <ul style="list-style-type: none"> <li>• 3.1.B.A2</li> <li>• 3.1.C.A1</li> <li>• 3.1.C.A2</li> </ul> </li> <li>▶ Bio.A.3.1.1               <ul style="list-style-type: none"> <li>• 3.1.B.A2</li> <li>• 3.1.B.A5</li> <li>• 3.1.C.A1</li> </ul> </li> <li>▶ Bio.A.4.2.1               <ul style="list-style-type: none"> <li>• 3.1.B.A8</li> <li>• 3.1.B.A5</li> <li>• 4.5.4.D</li> <li>• 4.2.4.C</li> </ul> </li> <li>▶ Bio.B.1.1.1               <ul style="list-style-type: none"> <li>• 3.1.B.A.4</li> <li>• 3.1.B.A5</li> <li>• 3.1.B.B2</li> <li>• 3.1.B.B3</li> <li>• 3.1.B.B5</li> <li>• 3.1.B.C2</li> <li>• 3.1.C.C2</li> </ul> </li> <li>▶ Bio.B.1.1.2               <ul style="list-style-type: none"> <li>• 3.1.B.A4</li> <li>• 3.1.B.A5</li> <li>• 3.1.B.B2</li> <li>• 3.1.B.B3</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>▶ <b>Photosynthesis, Cellular Respiration, and Fermentation: How do organisms obtain and use energy to carry out their life processes?</b> <ul style="list-style-type: none"> <li>• Describe the role of ATP in cellular activities.</li> <li>• Explain where plants get the energy they need to produce food.</li> <li>• Explain the role of light and pigments in photosynthesis.</li> <li>• Explain the role of electron carrier molecules in photosynthesis.</li> <li>• State the overall equation for photosynthesis.</li> <li>• Explain where organisms get the energy they need for life processes.</li> <li>• Define cellular respiration.</li> <li>• Compare photosynthesis and cellular respiration.</li> <li>• Explain how organisms get energy in the absence of oxygen.</li> <li>• Identify the pathways the body uses to release energy during exercise.</li> </ul> </li> <li>▶ <b>Cell Growth and Division: How do new cells arise from the division of pre-existing cells?</b> <ul style="list-style-type: none"> <li>• Explain the problems that growth causes for cells.</li> <li>• Compare asexual and sexual reproduction.</li> <li>• Describe the role of chromosomes in cell division.</li> <li>• Name the main events of the cell cycle.</li> <li>• Describe what happens during the four phases of mitosis.</li> <li>• Describe the process of cytokinesis.</li> <li>• Describe how the cell cycle is regulated.</li> <li>• Explain how cancer cells are different from other cells.</li> <li>• Contrast the number of chromosomes in body</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>▶ <b>Suggested Labs / Activities</b> <ul style="list-style-type: none"> <li>• Photosynthesis Gizmo</li> <li>• Photosynthesis Gizmo</li> <li>• Cell Energy Gizmo</li> <li>• Photosynthesis and Plant Pigments Lab</li> <li>• Respiration Lab</li> <li>• Fermentation Lab</li> <li>• Surface Area and Volume Lab</li> <li>• Cell Division Gizmo</li> <li>• Microscopic Study of Onion Root Tips</li> <li>• Modeling Meiosis Lab</li> <li>• Genetic Corn Lab</li> <li>• Mouse Genetics Gizmos – Monohybrid and Dihybrid</li> <li>• Chicken Genetics Gizmo</li> <li>• Blood Typing Simulation</li> </ul> </li> <li>▶ <b>Scientific Article Assignments</b></li> <li>▶ <b>Homework / Classwork to reinforce major concepts</b> <ul style="list-style-type: none"> <li>• Data Analysis</li> <li>• Visual Quizzes</li> <li>• Graphic Organizers / Diagrams</li> <li>• Study Guides</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>▶ <b>Formative Assessments</b></li> <li>▶ <b>Quizzes</b></li> <li>▶ <b>Chapter / topic summative assessments</b></li> <li>▶ <b>Lab Reports / Assessments</b></li> <li>▶ <b>Quarterly Assessment #2</b></li> </ul> |
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| <ul style="list-style-type: none"> <li>• 3.1.B.B5</li> <li>• 3.1.B.C2</li> <li>• 3.1.C.C2</li> <li>▶ Bio.B.2.1.2 <ul style="list-style-type: none"> <li>• 3.1.B.B1</li> <li>• 3.1.B.B2</li> <li>• 3.1.B.B3</li> <li>• 3.1.C.C2</li> </ul> </li> <li>▶ Bio.B.2.1.1 <ul style="list-style-type: none"> <li>• 3.1.B.B5</li> </ul> </li> <li>▶ Bio.B.1.2.2 <ul style="list-style-type: none"> <li>• 3.1.B.B1</li> <li>• 3.1.B.B5</li> <li>• 3.1.B.B2</li> <li>• 3.1.B.B3</li> <li>• 3.1.C.C2</li> </ul> </li> </ul> | <p>cells and in gametes.</p> <ul style="list-style-type: none"> <li>• Summarize the events of meiosis.</li> <li>• Contrast meiosis and mitosis.</li> </ul> |  |  |  |  |
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