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| <b>DEPARTMENT: SCIENCE</b>   | <b>COURSE TITLE: ANATOMY AND PHYSIOLOGY HONORS</b><br><b>COURSE NUMBER: 226</b>  |
| <b>GRADE(S): 11 &amp; 12</b> | <b>PRE-REQUISITES (IF ANY): ONE YEAR OF BIOLOGY AND ONE YEAR OF CHEMISTRY, OR 1 YEAR OF BIOLOGY AND PERMISSION OF THE INSTRUCTOR</b> |

| <b>UNIT</b>                            | <b>LENGTH</b> | <b>CONTENT</b>   | <b>SKILLS</b>   | <b>METHODS OF ASSESSMENT</b>  | <b>FRAMEWORK STRAND(S) &amp; STANDARD(S)</b>             |
|--|---------------|--|---|---|--|
| Introduction to Anatomy and Physiology | 1.5 weeks     | <ul style="list-style-type: none"> <li>Introduction to the 12 major systems of the human body, the language of anatomy, homeostasis, and two major themes of A&amp;P—structure &amp; function (S/F)</li> <li>Review of necessary biochemistry</li> </ul> | Students will: <ul style="list-style-type: none"> <li>Use the microscope correctly.</li> <li>Demonstrate facility in using anatomical terms and biochemical concepts.</li> </ul>  | <ul style="list-style-type: none"> <li>Quiz</li> <li>Lab report on the microscope</li> <li>Homework assignments</li> <li>Mini case study (The Hairdresser)</li> <li>Progress on first trimester project</li> <li>Unit test</li> </ul>                                     | Inquiry LS 1, 2, 3, 6, 7, 11<br>Domain LS 1, 2, 3, 4, 17 |
| Cells & Tissues                        | 1.5 weeks     | <ul style="list-style-type: none"> <li>Thorough review and expansion of information on cells from the Biology course</li> <li>Introduction to tissues, including the four major tissue types and their S/F</li> </ul>                                    | Students will: <ul style="list-style-type: none"> <li>Demonstrate a working understanding of cell structure and function.</li> <li>Demonstrate familiarity with histology of major tissue types.</li> </ul>   | <ul style="list-style-type: none"> <li>Lab reports on cells &amp; tissues</li> <li>Homework assignments</li> <li>Discussion of movies</li> <li>Mini case study (The Flu)</li> <li>Progress on project</li> <li>Case study (Dee Dee Mahoney)</li> <li>Unit Test</li> </ul> | Inquiry LS 1, 2, 3, 6, 7, 11<br>Domain LS 1, 2, 3, 4, 17 |
| Skin                                   | 1 week        | <ul style="list-style-type: none"> <li>S/F of skin cell types and layers</li> <li>Growth</li> <li>Glands</li> <li>Homeostasis of body temperature, burns</li> </ul>  | Students will: <ul style="list-style-type: none"> <li>Identify skin structures and explain their roles in whole body homeostasis, histology.</li> </ul>   | <ul style="list-style-type: none"> <li>Lab report on the skin</li> <li>Homework assignments</li> <li>Progress on project</li> <li>Mini case study (Fountain of Youth)</li> <li>Unit Test</li> </ul>   | Inquiry LS 1, 2, 3, 6, 7, 11<br>Domain LS 1, 2, 3, 4, 17 |
| Skeleton                               | 2.5 weeks     | <ul style="list-style-type: none"> <li>S/F of whole skeleton, individual bones, and skeletal tissue</li> <li>Bone development, fracture repair, cartilage, sex differences, articulations</li> </ul>   | Students will: <ul style="list-style-type: none"> <li>Explain S/F relationships of skeleton and of skeletal tissue</li> <li>Identify all bones of human skeleton.</li> <li>Demonstrate understanding of histology and familiarity with disarticulated skeleton and joints.</li> </ul> | <ul style="list-style-type: none"> <li>Lab report on the skeleton</li> <li>Homework assignments</li> <li>Discussion of movie: <i>Rheumatoid Arthritis</i></li> <li>Mini case study (Fatal Bone Infection)</li> <li>Progress on project</li> <li>Unit Test</li> </ul>      | Inquiry LS 1, 2, 3, 6, 7, 11<br>Domain LS 1, 2, 3, 4, 17 |
| Muscles                                | 2 weeks       | <ul style="list-style-type: none"> <li>Three muscle cell types</li> <li>Sliding filament model of muscle contraction</li> <li>Muscle structure</li> <li>Major muscle groups</li> </ul>   | Students will: <ul style="list-style-type: none"> <li>Identify histologically three muscle cell types.</li> <li>Demonstrate understanding of how muscles move the body, heart, and other internal organs and familiarity with superficial muscles.</li> </ul>                         | <ul style="list-style-type: none"> <li>Lab report on muscles</li> <li>Homework assignments</li> <li>Unit test</li> <li>First trimester poster</li> <li>Presentation projects</li> </ul>   | Inquiry LS 1, 2, 3, 6, 7, 11<br>Domain LS 1, 2, 3, 4, 17 |

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| Nervous System                       | 2.5 weeks | <ul style="list-style-type: none"> <li>S/F of the nervous system as a whole</li> <li>Structure of a neuron and neuroglia</li> <li>Action potential and synaptic conduction</li> <li>Neurotransmitters</li> <li>S/F of brain, spinal cord, cranial and other peripheral nerves</li> </ul> | <p>Students will:</p> <ul style="list-style-type: none"> <li>Explain the role of the nervous system in homeostasis and how a neuron can send a message.</li> <li>Understand major divisions of the brain, spinal cord and PNS.</li> <li>Perform brain dissection.</li> </ul>                       | <ul style="list-style-type: none"> <li>Lab report on the brain</li> <li>Homework assignments</li> <li>Mini case study (Anxious Woman)</li> <li>Discussion of movie <i>The Infinite Voyage—Prisoners of the Brain</i></li> <li>Discussion of speaker on electrical conductivity and brain structure</li> <li>Case study (Mary's Mystery)</li> <li>Unit Test</li> </ul> | Inquiry LS 1, 2, 3, 6, 7, 11<br>Domain LS 1, 2, 3, 4, 17 |
| Special Senses                       | 2 weeks   | <ul style="list-style-type: none"> <li>S/F of general sense receptors</li> <li>Nose</li> <li>Tongue</li> <li>Ear</li> <li>Eye</li> <li>Balance</li> </ul>  | <p>Students will:</p> <ul style="list-style-type: none"> <li>Understand anatomy of special sense organs.</li> <li>Demonstrate ability to identify structures and explain S/F relationships.</li> <li>Understand histology of neurons &amp; taste buds.</li> <li>Perform eye dissection.</li> </ul> | <ul style="list-style-type: none"> <li>Lab reports on taste, smell, the eye, the ear</li> <li>Homework assignments</li> <li>Progress on second trimester project</li> <li>Unit Test</li> </ul>  | Inquiry LS 1, 2, 3, 6, 7, 11<br>Domain LS 1, 2, 3, 4, 17 |
| Endocrine System                     | 2.5 weeks | <ul style="list-style-type: none"> <li>S/F of endocrine organs and their role in maintaining homeostasis</li> <li>Hormones</li> <li>Feedback systems</li> </ul>  | <p>Students will:</p> <ul style="list-style-type: none"> <li>Explain role of endocrine system in homeostasis.</li> <li>Demonstrate understanding of histology of endocrine tissues.</li> <li>Perform fetal pig dissection.</li> </ul>  | <ul style="list-style-type: none"> <li>Lab report on endocrine system</li> <li>Homework assignments</li> <li>Progress on project</li> <li>Mini case study (Bug-Eyed Woman)</li> <li>Unit Test</li> </ul>  | Inquiry LS 1, 2, 3, 6, 7, 11<br>Domain LS 1, 2, 3, 4, 17 |
| Cardiovascular and Lymphatic Systems | 2.5 weeks | <ul style="list-style-type: none"> <li>S/F of heart and blood vessels</li> <li>Cardiac cycle</li> <li>Heart conduction system</li> <li>EKG</li> <li>Blood</li> <li>Fetal circulation</li> <li>S/F of lymphatic organs, lymph</li> </ul>  | <p>Students will:</p> <ul style="list-style-type: none"> <li>Understand A &amp; P of circulatory and lymphatic systems.</li> <li>Demonstrate understanding of EKG computer lab.</li> <li>Perform heart dissection.</li> </ul>  | <ul style="list-style-type: none"> <li>Lab report on the heart</li> <li>Homework assignments</li> <li>Progress on project</li> <li>Unit Test</li> </ul>   | Inquiry LS 1, 2, 3, 6, 7, 11<br>Domain LS 1, 2, 3, 4, 17 |
| Respiratory System                   | 1.5 weeks | <ul style="list-style-type: none"> <li>S/F of nose, air passages, lungs, sinuses</li> <li>Pulmonary functions</li> <li>Blood transport of O<sub>2</sub> and CO<sub>2</sub></li> </ul>  | <p>Students will:</p> <ul style="list-style-type: none"> <li>Test for pulmonary functions.</li> <li>Perform fetal pig dissection.</li> <li>Demonstrate understanding of histology of tracheal and lung tissue.</li> </ul>  | <ul style="list-style-type: none"> <li>Lab report on breathing</li> <li>Homework assignments</li> <li>Progress on project</li> <li>Case study (Gummi Bear Girl)</li> <li>Unit Test</li> </ul>   | Inquiry LS 1, 2, 3, 6, 7, 11<br>Domain LS 1, 2, 3, 4, 17 |
| Digestive System and Nutrition       | 1.5 weeks | <ul style="list-style-type: none"> <li>S/F of GI tract and accessory organs</li> <li>Mastication, deglutition,</li> </ul>  | <p>Students will:</p> <ul style="list-style-type: none"> <li>Perform fetal pig dissection.</li> <li>Demonstrate understanding of</li> </ul>  | <ul style="list-style-type: none"> <li>Lab report on digestive system</li> <li>Homework assignments</li> <li>Unit test</li> </ul>   | Inquiry LS 1, 2, 3, 6, 7, 11<br>Domain LS 1, 2,          |

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|   |         | <ul style="list-style-type: none"> <li>peristalsis, segmentation</li> <li>Nutrition biochemistry, food pyramid, and nutritional disorders</li> </ul> | histology of digestive tissues. | <ul style="list-style-type: none"> <li>Second trimester poster</li> <li>Presentation projects</li> </ul>                                  | 3, 4, 17   |
| Urinary, Reproductive, and Immune Systems, Stress | Ongoing |  |                                 | <ul style="list-style-type: none"> <li>Discussion of various speakers and movies</li> <li>Trimester projects</li> <li>Lectures</li> </ul> | Inquiry LS 1, 2, 3, 6, 7, 11<br>Domain LS 1, 2, 3, 4, 17 |