

**WEST JEFFERSON HILLS SCHOOL DISTRICT
ANATOMY AND PHYSIOLOGY CURRICULUM**

GRADE 12

| <p style="text-align: center;">PA Academic Standards Student must be able to do</p> | <p style="text-align: center;">Objective Content or process student will be able to know and do</p> | <p style="text-align: center;">Instructional Methods</p> | <p style="text-align: center;">Materials/ Resources Textbooks, trade books, workbooks, software, hardware, etc.</p> | <p style="text-align: center;">*Assessment Procedures *Additional adaptations, modifications, accommodations, and enrichment/ acceleration will be provided per IEP</p> | <p style="text-align: center;">*Additional Learning Opportunities for students who do not meet basic standards *Additional adaptations, modifications, and accommodations will be provided per IEP</p> | <p style="text-align: center;">*Extended Learning Opportunities for students who can go beyond the basic standards. *Additional enrichment/acceleration will be provided per IEP</p> |
|--|--|---|---|--|---|---|
| <p>3.2 Inquiry and Design</p> | | | | | | |
| <p>A. Evaluate the nature of scientific and technological knowledge.</p> | <ul style="list-style-type: none"> • Know and use the ongoing scientific processes to continually improve and better understand how things work. • Integrate new information into existing theories and explain implied results. | <ul style="list-style-type: none"> • Direct Instruction • Group Work • Lab Work • Demonstrations • Movie Clips • Computer Projects • Cooperative Learning • Independent Reading • Brainstorming • Class discussions • Note guides • Dissections | <ul style="list-style-type: none"> • Textbook/ Supplements • Transparencies • PowerPoint • Lab Manual Diagrams • Handouts Lab Equipment • Model Kits • Microscopes • Measuring Devices • Computer (classroom) • Computer (lab) • Preserved and Living Specimens • Chemicals • Videos • Testing Kits/materials • Magazines and Journals • Instructional CD's | <ul style="list-style-type: none"> • Teacher Observation • Tests • Quizzes • Problem Solving • In-Class Work • Homework • Lab write-ups • Midterms • Final • Critical Thinking • Case Studies • Essays • Rubric | <ul style="list-style-type: none"> • Review • Small Group Instructions • Tutoring • Technology | <ul style="list-style-type: none"> • Additional Reading • Science Competition • Science Fairs • Independent Projects • Field Trips • Science Clubs • Summer Assignments • Internships • Science Honors Institute • Shadowing Programs |

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| 3.2 Inquiry and Design | | | | | | |
| B. Apply process knowledge and organize scientific and technological phenomena in varied ways. | <ul style="list-style-type: none"> • Describe materials using precise quantitative and qualitative skills based on observations. • Judge that conclusions are consistent and logical with experimental conditions. • Interpret results of experimental research to predict new information or improve a solution. | <ul style="list-style-type: none"> • Direct Instruction • Group Work • Lab Work • Demonstrations • Movie Clips • Computer Projects • Cooperative Learning • Independent Reading • Brainstorming • Class discussions • Note guides • Dissections | <ul style="list-style-type: none"> • Textbook/ Supplements • Transparencies • PowerPoint • Lab Manual Diagrams • Handouts Lab Equipment • Microscopes • Measuring Devices • Computer (classroom) • Computer (lab) • Preserved and Living Specimens • Chemicals • Videos • Testing Kits/materials • Magazines and Journals • Instructional CD's | <ul style="list-style-type: none"> • Teacher Observation • Tests • Quizzes • Problem Solving • In-Class Work • Homework • Lab write-ups • Midterms • Final • Critical Thinking • Case Studies • Essays • Rubric | <ul style="list-style-type: none"> • Review • Small Group Instructions • Tutoring • Technology | <ul style="list-style-type: none"> • Additional Reading • Science Competition • Science Fairs • Independent Projects • Field Trips • Science Clubs • Summer Assignments • Internships • Science Honors Institute • Shadowing Programs |

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| 3.2 Inquiry and Design | | | | | | |
| C. Apply the elements of scientific inquiry to solve problems. | <ul style="list-style-type: none"> • Generate questions about objects, organisms, and/or events that can be answered through scientific investigations. • Evaluate the appropriateness of questions. • Conduct a multiple step experiment. • Judge the significance of experimental information in answering the question. • Suggest additional steps that might be done experimentally. | <ul style="list-style-type: none"> • Direct Instruction • Group Work • Lab Work • Demonstrations • Movie Clips • Computer Projects • Cooperative Learning • Independent Reading • Brainstorming • Class discussions • Note guides • Dissections | <ul style="list-style-type: none"> • Textbook/ Supplements • Transparencies • PowerPoint • Lab Manual Diagrams • Handouts Lab Equipment • Model Kits • Microscopes • Measuring Devices • Computer (classroom) • Preserved and Living Specimens • Chemicals • Videos • Testing Kits/materials • Magazines and Journals • Instructional CD's | <ul style="list-style-type: none"> • Teacher Observation • Tests • Quizzes • Problem Solving • In-Class Work • Homework • Lab write-ups • Midterms • Final • Critical Thinking • Case Studies • Essays • Rubric | <ul style="list-style-type: none"> • Review • Small Group Instructions • Tutoring • Technology | <ul style="list-style-type: none"> • Additional Reading • Science Competition • Science Fairs • Independent Projects • Field Trips • Science Clubs • Summer Assignments • Internships • Science Honors Institute • Shadowing Programs |

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| 3.2 Inquiry and Design | | | | | | |
| D. Identify and apply the technological design process to solve problems. | <ul style="list-style-type: none"> • Examine the problem, rank all necessary information and all questions that must be answered. • Propose and analyze a solution. • Evaluate the solution, test, redesign, and improve as necessary. • Communicate the process and evaluate and present the impacts of the solution. | <ul style="list-style-type: none"> • Direct Instruction • Group Work • Lab Work • Demonstrations • Movie Clips • Computer Projects • Cooperative Learning • Independent Reading • Brainstorming • Class discussions • Note guides | <ul style="list-style-type: none"> • Textbook/ Supplements • Transparencies • PowerPoint • Lab Manual Diagrams • Handouts Lab Equipment • Measuring Devices • Computer (classroom) • Chemicals • Videos • Testing Kits/materials • Magazines and Journals • Instructional CD's | <ul style="list-style-type: none"> • Teacher Observation • Tests • Quizzes • Problem Solving • In-Class Work • Homework • Lab write-ups • Midterms • Final • Critical Thinking • Case Studies • Essays • Rubric | <ul style="list-style-type: none"> • Review • Small Group Instructions • Tutoring • Technology | <ul style="list-style-type: none"> • Additional Reading • Science Competition • Science Fairs • Independent Projects • Field Trips • Science Clubs • Summer Assignments • Internships • Science Honors Institute • Shadowing Programs |

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| 3.3 Biological Sciences | | | | | | |
| A. Explain the relationship between structure and function at all levels of organization. | <ul style="list-style-type: none"> • Identify and explain interactions among organisms (e.g., mutually beneficial, harmful relationships). • Explain and analyze the relationship between structure and function at the molecular, cellular and organ-system level. | <ul style="list-style-type: none"> • Direct Instruction • Group Work • Lab Work • Demonstrations • Movie Clips • Computer Projects • Cooperative Learning • Independent Reading • Brainstorming • Class discussions • Note guides • Dissections | <ul style="list-style-type: none"> • Textbook/ Supplements • Transparencies • PowerPoint • Lab Manual Diagrams • Handouts Lab Equipment • Model Kits • Microscopes • Measuring Devices • Computer (classroom) • Computer (lab) • Preserved and Living Specimens • Chemicals • Videos • Testing Kits/materials • Magazines and Journals • Instructional CD's | <ul style="list-style-type: none"> • Teacher Observation • Tests • Quizzes • Problem Solving • In-Class Work • Homework • Lab write-ups • Midterms • Final • Critical Thinking • Case Studies • Essays | <ul style="list-style-type: none"> • Review • Small Group Instructions • Tutoring • Technology | <ul style="list-style-type: none"> • Additional Reading • Science Competition • Science Fairs • Independent Projects • Field Trips • Science Clubs • Summer Assignments • Internships • Science Honors Institute • Shadowing Programs |

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| 3.3 Biological Sciences | | | | | | |
| B. Analyze the chemical and structural basis of living organisms. | <ul style="list-style-type: none"> • Identify and describe factors affecting metabolic function (e.g., temperature, acidity, hormones). • Evaluate relationships between structure and functions of different anatomical parts given their structure. • Describe potential impact of genomic research on the biochemistry and physiology of life. • Identify the specialized structures and regions of the cell and the functions of each. • Explain how cells store and | <ul style="list-style-type: none"> • Direct Instruction • Group Work • Lab Work • Demonstrations • Movie Clips • Computer Projects • Cooperative Learning • Independent Reading • Brainstorming • Class discussions • Note guides • Dissections | <ul style="list-style-type: none"> • Textbook/ Supplements • Transparencies • PowerPoint • Lab Manual Diagrams • Handouts Lab Equipment • Model Kits • Microscopes • Measuring Devices • Computer (classroom) • Computer (lab) • Preserved and Living Specimens • Chemicals • Videos • Testing Kits/materials • Magazines and Journals • Instructional CD's | <ul style="list-style-type: none"> • Teacher Observation • Tests • Quizzes • Problem Solving • In-Class Work • Homework • Lab write-ups • Midterms • Final • Critical Thinking • Case Studies • Essays • Rubric | <ul style="list-style-type: none"> • Review • Small Group Instructions • Tutoring • Technology | <ul style="list-style-type: none"> • Additional Reading • Science Competition • Science Fairs • Independent Projects • Field Trips • Science Clubs • Summer Assignments • Internships • Science Honors Institute • Shadowing Programs |

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| | <p>use information to guide their functions.</p> <ul style="list-style-type: none"> • Explain cell functions and processes in terms of chemical reactions and energy change. | | | | | |
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| 3.3 Biological Sciences | | | | | | |
| C. Describe how genetic information is inherited and expressed. | <ul style="list-style-type: none"> • Describe mutations' effects on a trait's expression. • Explain the relationship among DNA, genes, and chromosomes. • Explain different types of inheritance (e.g., multiple allele, sex-influenced traits). • Describe the role of DNA in protein synthesis as it relates to gene expression. • Explain birth defects from the standpoint of embryological | <ul style="list-style-type: none"> • Direct Instruction • Group Work • Lab Work • Demonstrations • Movie Clips • Computer Projects • Cooperative Learning • Independent Reading • Brainstorming • Class discussions • Note guides | <ul style="list-style-type: none"> • Textbook/ Supplements • Transparencies • PowerPoint • Lab Manual Diagrams • Handouts Lab Equipment • Model Kits • Measuring Devices • Computer (classroom) • Preserved and Living Specimens • Chemicals • Videos • Testing Kits/materials • Magazines and Journals • Instructional CD's | <ul style="list-style-type: none"> • Teacher Observation • Tests • Quizzes • Problem Solving • In-Class Work • Homework • Lab write-ups • Midterms • Final • Critical Thinking • Case Studies • Essays • Rubric | <ul style="list-style-type: none"> • Review • Small Group Instructions • Tutoring • Technology | <ul style="list-style-type: none"> • Additional Reading • Science Competition • Science Fairs • Independent Projects • Field Trips • Science Clubs • Summer Assignments • Internships • Science Honors Institute • Shadowing Programs |

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| | development and/or changes in genetic makeup. | | | | | |
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