AP Environmental Science: Spring 2020 Syllabus

Course webpage: [lamberthapes.weebly.com](file:///D%3A%5CAPES%20Documents%5Clamberthapes.weebly.com) Instructor: Mrs. Leslie Lamberth llamberth@wcpss.net

*This syllabus includes the course pacing for the entire spring semester. All test dates are firm unless a change is made by your instructor. Grades are based on total points with each assignment receiving a specific point value. Any assignment that is submitted late or in an incorrect format will be assessed a 20% penalty. Students are required to register and complete assignments in AP Classroom, an online tool for practicing test material for the AP Exam.*

Unit 1: The Living World

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| **Course Dates** | **Curriculum Standards** | **Textbook coverage** |
| Jan. 28th- Feb. 13th (13 days)**Test Date: February 13th** | **Skills***I. Identifying and investigating environmental problems.**II. Sustainable development.**III. Scientific principles and concepts***Standard 1 Content**1.2 Terrestrial Biomes1.3 Aquatic Biomes1.4 The Carbon Cycle1.5 The Nitrogen Cycle1.6 The Phosphorus Cycle1.7 The Hydrologic Cycle1.8 Primary Productivity1.9 Trophic levels1.10 Energy flow and the 10% rule1.11 Food chains and food webs | pg. 10-15, 35-40pg. 20-30pg. 41-45pg. 99-106pg. 106-112pg. 66pg. 67-68pg. 68-69pg. 65pg. 61-65, 87-88pg. 61-65pg. 57-60pg. 61-65 |
| Assignments/Activities | Feedback loop scenarios, Carbon cycle modeling simulation, Thermodynamics lab, Aquatic light penetration lab, Biomes investigations |
|  | **Standard 2 Content**2.1 Introduction to Biodiversity2.2 Ecosystem Services2.3 Island Biogeography2.4 Ecological Tolerance2.5 Disruptions to Ecosystems2.6 Adaptations2.7 Ecological Succession | pg. 227-232pg. 24-25, 230-232, 525-526pg. 126-128, 239pg. 75-80, 87-91pg. 112-114pg. 74-75, 81-86pg. 92-95 |
| Assignments/Activities | Island biogeography demonstration, Succession observations and discussion |

Unit 2: Populations

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| **Course Dates** | **Curriculum Standards** | **Textbook coverage** |
| Feb. 14th -26th (7 days)**Test Date: February 26th** | **Standard 3 Content**3.1 Generalist and Specialist Species3.2 K-selected and r-selected Species3.3 Survivorship Curves3.4 Carrying Capacity3.5 Population Growth and Resource Availability3.6 Age Structure Diagrams3.7 Total Fertility Rate3.8 Human Population Dynamics3.9 Demographic Transition | pg. 76-77pg. 120-121pg. 123-125pg. 119-120pg. 118-120, 121-122pg. 142-143pg. 137-145pg. 133-137pg. 146-149 |
| Assignments/Activities | Bubble survivorship lab, Population dynamics calculations, Age structure diagram analysis, Demographic transition activity |

Unit 3: Earth Systems and Resources

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| **Course Dates** | **Curriculum Standards** | **Textbook coverage** |
| Feb. 27th- Mar. 10 (8 days)**Test Date: March 10th**  | **Standard 4 Content**4.1 Plate Tectonics4.2 Soil Formation and Erosion4.3 Soil Composition and Properties4.4 Earth’s Atmosphere4.5 Global Wind Patterns4.6 Watersheds4.7 Solar Radiation and Earth’s Seasons4.8 Earth’s Geography and Climate4.9 El Nino and La Nina | pg. 302-306, 314-320pg. 199-210pg. 199-210pg. 324-327pg. 327-332pg. 378-392\*workbook packet\*pg. 328-333pg. 333-335 |
| Assignments/Activities | Plate interactions maps, Soil analysis and comparison lab, Atmosphere patterns workbook packet, El Nino analysis |

Unit 4: Land and Water Use

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| **Course Dates** | **Curriculum Standards** | **Textbook coverage** |
| Mar. 11th – 20th (8 days)**Test Date: March 20th**  | **Standard 5 Content**5.2 Clearcutting5.3 The Green Revolution5.4 Impacts of Agricultural Practices5.5 Irrigation Methods5.6 Pest Control Methods5.7 Meat Production Methods5.8 Impacts of Overfishing5.10 Impacts of Urbanization5.11 Ecological Footprints5.13 Methods to Reduce Urban Runoff5.14 Integrated Pest Management5.15 Sustainable Agriculture5.16 Aquaculture5.17 Sustainable Forestry | pg. 252-255pg. 190-195pg. 179-195pg. 206pg. 210-217pg. 184-188pg. 186-187, 117pg. 500-510,pg. 511-516pg. 220-221pg. 217-222pg. 187-188pg. 259-260, 281-285 |
| Assignments/Activities | GMO Research and Food Labeling debate, Pesticide development and solutions investigation, Forest dilemmas game, Sustainable cities development activity |

Unit 5: Energy Resources and Consumption

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| **Course Dates** | **Curriculum Standards** | **Textbook coverage** |
| Mar. 23rd – Apr. 1st (8 days)**Test Date: April 1st**  | **Standard 5 Content**5. 9 Impacts of Mining**Standard 6 Content**6.1 Renewable and Nonrenewable Resources6.2 Global Energy Consumption6.3 Fuel Types and Uses6.4 Distribution of Natural Resources6.5 Fossil Fuels6.6 Nuclear Power6.7 Energy from Biomass6.8 Solar Energy6.9 Hydroelectric Power6.10 Geothermal Energy6.11 Hydrogen Fuel Cell6.12 Wind Energy6.13 Energy Conservation | pg. 311-314pg. 520-521pg. 428-430pg. 436pg. 430,434,437pg. 430-440pg. 441-447pg. 466-471pg. 457-462pg. 471-472pg. 472-474pg. 465-466pg. 462-465pg. 451-456, 474-475 |
| Assignments/Activities | Energy calculations, Home energy audit, Cookie mining lab,  |

Unit 6: Atmospheric Pollution

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| **Course Dates** | **Curriculum Standards** | **Textbook coverage** |
| Apr. 2nd- Apr. 15th (4 days)**Online Quiz** | **Standard 7 Content**7.1 Introduction to Air Pollution7.2 Photochemical Smog7.3 Thermal Inversion7.4 Atmospheric CO2 and Particulates7.5 Indoor Air Pollutants7.6 Reduction of Air Pollutants7.7 Acid Rain7.8 Noise Pollution | pg. 351-360, 364-365pg. 363pg. 361-363pg. 356-357, 358-360pg. 360-361pg. 365-366, 369-374, 346pg. 367-369 |
| Assignments/Activities | Smog City simulation activity, Particulate deposition and ozone lab |

Unit 7: Aquatic and Terrestrial Pollution

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| **Course Dates** | **Curriculum Standards** | **Textbook coverage** |
| Apr.16th – Apr. 28th (9 days)**Test Date: April 28th**  | **Standard 8 Content**8.1 Sources of Pollution8.2 Human Impacts on Ecosystems8.3 Endocrine Disruptors8.4 Human Impacts on Wetlands and Mangroves8.5 Eutrophication8.6 Thermal Pollution8.7 Persistent Organic Pollutants8.8 Bioaccumulation and Biomagnification8.9 Solid Waste Disposal8.10 Waste Reduction Methods8.11 Sewage Treatment8.12 Lethal Dose 50%8.13 Dose Response Curve8.14 Pollution and Human Health8.15 Pathogens and Infectious Diseases | pg. 402-410pg. 410-416, 112-114pg. 162pg. 289-297pg. 404-407pg. 410pg. 166-167pg. 165pg. 479-484, 488-496pg. 484-488pg. 416-422pg. 168-170pg. 168-170pg. 154-167pg. 156-160 |
| Assignments/Activities | Water Quality Lab, Water treatment investigation, Dose-response problems, Personal waste inventory, Toxicity lab |

Unit 8: Global Change

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| **Course Dates** | **Curriculum Standards** | **Textbook coverage** |
| Apr. 29th – May 8th (7 days)**Test Date: May 8th**  | **Standard 9 Content**9.1 Stratospheric Ozone Depletion9.2 Reducing Ozone Depletion9.3 The Greenhouse Effect9.4 Increases in Greenhouse Gases9.5 Global Climate Change9.6 Ocean Warming9.7 Ocean Acidification9.8 Invasive Species9.9 Endangered Species9.10 Human Impacts on Biodiversity | pg. 364-366pg. 365-366pg. 326-327pg. 358-360pg. 335-342pg. 340pg. 340, 226pg. 235-237pg. 240-247pg. 232-235 |
| Assignments/Activities | Stratospheric ozone depletion lab, Greenhouse effect simulation, Endangered species investigation, Rainforest restoration case study |

**AP Environmental Science Exam May 11th**

*Following the AP exam in May students will participate in projects and labs related to the curriculum to strengthen knowledge of the content and practice basic laboratory skills. A cumulative, teacher-made final exam will be worth 20% of the overall semester grade and will be tested during the school-wide exam period at the beginning of June.*

Semester Assignment Descriptions (with point values)

**Environmental Reports/Journals** (25 points each)

Reports and journals are designed to have students investigate media sources for current events related to environmental topics or make observations in the field. Each report or journal should be in paragraph form and is expected to provide detailed information about the connection between observations, current events, and the standards addressed in the curriculum. More details about formatting of this assignment will be provided when the assignment is presented in class.

**Labs** (40 points each)

 Labs are designed to reinforce content covered in the curriculum through hands-on learning. Students will often collect data and then may be asked to write a reflection or report on data collected in addition to analysis questions. Not all labs will be graded. Students will be informed ahead of time when a lab will be collected for a grade. All lab materials will be provided in the classroom but student may be required to collect information at home or in their surrounding environment to complete the lab.

\*All assignments except for the journals and free response questions will be submitted electronically and therefore must be typed and submitted on time to receive full credit for the assignment. \*

**Environmental Awareness and Advocacy Credits** (Up to 15 per quarter)

 Throughout the semester there will be opportunities for students to earn “bonus points” toward the final quarter grade by participating in activities that support the environment and promote awareness of environmental issues. Some of these events will be offered on the school grounds but others may be completed outside of the school day and campus. Five of the points will be awarded for specific activities tied to what is being covered in the course at the time or events happening in the local area. More information will be provided throughout the semester.