AP Environmental Science: Spring 2020 Syllabus

Course webpage: [lamberthapes.weebly.com](file:///D:\APES%20Documents\lamberthapes.weebly.com) Instructor: Mrs. Leslie Lamberth [llamberth@wcpss.net](mailto: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 Biomes  1.3 Aquatic Biomes  1.4 The Carbon Cycle  1.5 The Nitrogen Cycle  1.6 The Phosphorus Cycle  1.7 The Hydrologic Cycle  1.8 Primary Productivity  1.9 Trophic levels  1.10 Energy flow and the 10% rule  1.11 Food chains and food webs | pg. 10-15, 35-40  pg. 20-30  pg. 41-45  pg. 99-106  pg. 106-112  pg. 66  pg. 67-68  pg. 68-69  pg. 65  pg. 61-65, 87-88  pg. 61-65  pg. 57-60  pg. 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 Biodiversity  2.2 Ecosystem Services  2.3 Island Biogeography  2.4 Ecological Tolerance  2.5 Disruptions to Ecosystems  2.6 Adaptations  2.7 Ecological Succession | pg. 227-232  pg. 24-25, 230-232, 525-526  pg. 126-128, 239  pg. 75-80, 87-91  pg. 112-114  pg. 74-75, 81-86  pg. 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 Species  3.2 K-selected and r-selected Species  3.3 Survivorship Curves  3.4 Carrying Capacity  3.5 Population Growth and Resource Availability  3.6 Age Structure Diagrams  3.7 Total Fertility Rate  3.8 Human Population Dynamics  3.9 Demographic Transition | pg. 76-77  pg. 120-121  pg. 123-125  pg. 119-120  pg. 118-120, 121-122  pg. 142-143  pg. 137-145  pg. 133-137  pg. 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 Tectonics  4.2 Soil Formation and Erosion  4.3 Soil Composition and Properties  4.4 Earth’s Atmosphere  4.5 Global Wind Patterns  4.6 Watersheds  4.7 Solar Radiation and Earth’s Seasons  4.8 Earth’s Geography and Climate  4.9 El Nino and La Nina | pg. 302-306, 314-320  pg. 199-210  pg. 199-210  pg. 324-327  pg. 327-332  pg. 378-392  \*workbook packet\*  pg. 328-333  pg. 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 Clearcutting  5.3 The Green Revolution  5.4 Impacts of Agricultural Practices  5.5 Irrigation Methods  5.6 Pest Control Methods  5.7 Meat Production Methods  5.8 Impacts of Overfishing  5.10 Impacts of Urbanization  5.11 Ecological Footprints  5.13 Methods to Reduce Urban Runoff  5.14 Integrated Pest Management  5.15 Sustainable Agriculture  5.16 Aquaculture  5.17 Sustainable Forestry | pg. 252-255  pg. 190-195  pg. 179-195  pg. 206  pg. 210-217  pg. 184-188  pg. 186-187, 117  pg. 500-510,  pg. 511-516  pg. 220-221  pg. 217-222  pg. 187-188  pg. 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 Resources  6.2 Global Energy Consumption  6.3 Fuel Types and Uses  6.4 Distribution of Natural Resources  6.5 Fossil Fuels  6.6 Nuclear Power  6.7 Energy from Biomass  6.8 Solar Energy  6.9 Hydroelectric Power  6.10 Geothermal Energy  6.11 Hydrogen Fuel Cell  6.12 Wind Energy  6.13 Energy Conservation | pg. 311-314  pg. 520-521  pg. 428-430  pg. 436  pg. 430,434,437  pg. 430-440  pg. 441-447  pg. 466-471  pg. 457-462  pg. 471-472  pg. 472-474  pg. 465-466  pg. 462-465  pg. 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 Pollution  7.2 Photochemical Smog  7.3 Thermal Inversion  7.4 Atmospheric CO2 and Particulates  7.5 Indoor Air Pollutants  7.6 Reduction of Air Pollutants  7.7 Acid Rain  7.8 Noise Pollution | pg. 351-360, 364-365  pg. 363  pg. 361-363  pg. 356-357, 358-360  pg. 360-361  pg. 365-366, 369-374, 346  pg. 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 Pollution  8.2 Human Impacts on Ecosystems  8.3 Endocrine Disruptors  8.4 Human Impacts on Wetlands and Mangroves  8.5 Eutrophication  8.6 Thermal Pollution  8.7 Persistent Organic Pollutants  8.8 Bioaccumulation and Biomagnification  8.9 Solid Waste Disposal  8.10 Waste Reduction Methods  8.11 Sewage Treatment  8.12 Lethal Dose 50%  8.13 Dose Response Curve  8.14 Pollution and Human Health  8.15 Pathogens and Infectious Diseases | pg. 402-410  pg. 410-416, 112-114  pg. 162  pg. 289-297  pg. 404-407  pg. 410  pg. 166-167  pg. 165  pg. 479-484, 488-496  pg. 484-488  pg. 416-422  pg. 168-170  pg. 168-170  pg. 154-167  pg. 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 Depletion  9.2 Reducing Ozone Depletion  9.3 The Greenhouse Effect  9.4 Increases in Greenhouse Gases  9.5 Global Climate Change  9.6 Ocean Warming  9.7 Ocean Acidification  9.8 Invasive Species  9.9 Endangered Species  9.10 Human Impacts on Biodiversity | pg. 364-366  pg. 365-366  pg. 326-327  pg. 358-360  pg. 335-342  pg. 340  pg. 340, 226  pg. 235-237  pg. 240-247  pg. 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.