ADVANCED PLACEMENT ENVIRONMENTAL SCIENCE (APES) SYLLABUS

TEACHER: Mrs. Gowen
DATE: 2017 - 2018
TEXTBOOK: Environmental Science: A Global Concern, 11th edition by William and Mary Ann Cunningham
APES EXAM: May 10, 2018 at 12:00

COURSE OBJECTIVE: Advanced Placement Environmental Science (APES) should NOT be considered a “college prep” course. This is a COLLEGE course, with college level expectations for behavior, attendance, participation and effort. The goal of this course is to provide students with the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world, to identify and analyze environmental problems both natural and man-made, to evaluate the relative risks associated with these problems, and to examine alternative solutions for resolving and/or preventing the problems. It will force you to integrate what you know about Biology, Chemistry, Physics, Math, History, Sociology, etc., to come to an understanding of the world around you, the forces that affect it, and the choices you will make in order to live here.

COURSE OUTLINE: This course outline is presented as a guideline; all dates are subject to change.

<table>
<thead>
<tr>
<th>DATE</th>
<th>TOPIC</th>
<th>TEXTBOOK READING</th>
<th>SUNSHINE STATE STANDARD</th>
<th>AP ENV. SCI. TOPIC OUTLINE REFERENCE</th>
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<tr>
<td>Weeks 1-2</td>
<td>Intro. To Environmental Science</td>
<td>Chapter 1</td>
<td>SC.G.1.4.1-3, SC.H.1.4.1-7, SC.H.3.4.1-6</td>
<td>VII</td>
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<tr>
<td>Weeks 3-4</td>
<td>Human Health, Toxicity, and Risk</td>
<td>Chapter 8</td>
<td>SC.G.1.4.1-3, SC.H.1.4.1-7, SC.H.3.4.1-6, SC.L.1-20</td>
<td>VI</td>
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<tr>
<td>Weeks 5-6</td>
<td>Environmental History, Laws, and Economics</td>
<td>Chapters 23 &amp; 24</td>
<td>SC.G.2.4.1-6, SC.H.2.4.1-2, SC.H.3.4.1-6, SC.L.17.1-16</td>
<td>IV, VI and VII</td>
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<tr>
<td>Weeks 7-9</td>
<td>Population</td>
<td>Chapters 6, 7 &amp; 22</td>
<td>SC.G.2.4.1-6, SC.L.17.18-20</td>
<td>III</td>
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<tr>
<td>Weeks 10-13</td>
<td>Living World</td>
<td>Chapters 3, 4, 5, 11, 12 and 13</td>
<td>SC.E.7.1, SC.F.1.4.1-8, SC.F.2.4.1-3, SC.G.1.4.1-3, SC.L.15.1, SC.L.17.1-20</td>
<td>II</td>
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<td>Weeks 16-18</td>
<td>Energy</td>
<td>Chapters 19-20</td>
<td>SC.B.1.4.1-7, SC.E.6.6</td>
<td>V, VI</td>
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<td>Weeks 19-20</td>
<td>Soil / Soil Pollution and Agriculture</td>
<td>Chapters 9 &amp; 10</td>
<td>SC.D.1.4.1-4, SC.D.2.4-1, SC.G.1.4.1-3, SC.G.2.4.1-6</td>
<td>I, III, IV, VI</td>
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<tr>
<td>Week 21</td>
<td>Other Land Use: Forestry, Rangelands, etc.</td>
<td>Chapters 12 &amp; 22</td>
<td>SC.L.17.16-20</td>
<td>III, IV</td>
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<td>Weeks 22-23</td>
<td>Water Use / Management and Water Pollution</td>
<td>Chapters 17 &amp; 18</td>
<td>SC.D.1.4.1-4, SC.D.2.4-1, SC.L.17.16-20</td>
<td>I, IV, VI</td>
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<tr>
<td>Weeks 24-25</td>
<td>Atmosphere / Atmospheric Conditions and Air Pollution</td>
<td>Chapters 15 &amp; 16</td>
<td>SC.D.2.4.1, SC.G.2.4.1-6, SC.E.7.2-9, SC.L.17.16-20</td>
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<td>Week 26</td>
<td>Solid, Toxic and Hazardous Waste</td>
<td>Chapter 21</td>
<td>SC.D.2.4.1, SC.G.2.4.1-6, SC.L.17.16</td>
<td>VI</td>
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<td>Weeks 27-29</td>
<td>Global Change</td>
<td>Chapters 11, 12, 13 &amp; 25</td>
<td>SC.D.2.4.1, SC.G.2.4.1-6, SC.L.17.1-20</td>
<td>VII</td>
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<tr>
<td>Weeks 30-31</td>
<td>AP Exam Review</td>
<td>Chapter 1 through 24</td>
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<td>I through VII</td>
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<tr>
<td>Weeks 32-36</td>
<td>Extended enrichment projects; various topics</td>
<td>Chapters 1 through 24</td>
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<td>I through VII</td>
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MATERIALS:
A notebook or folder of the student’s choice for holding papers/handouts, a composition notebook (each semester) to be used as an Interactive Science Notebook (ISN), paper, pens, pencils, colored pencils, calculator, and textbook.
REQUIREMENTS FOR SUCCESS

CLASSROOM RULES: In order to provide an atmosphere pleasant to be in and conducive to learning certain rules must be followed.

1. **NO TALKING WHILE THE INSTRUCTOR IS TALKING.** If you would like to speak, raise your hand to be acknowledged.
2. No cell phones or other electronic devices allowed in the classroom (unless being used for research).
3. Everyone needs to be in his or her seat when the bell rings. Class will start as soon as the bell rings.
4. Appropriate language should be used at all times.
5. No food or drink allowed in the classroom (except in the “Snack Zone”).

GRADING POLICY:

1. The school grading system will be used in this class.
   
   - 90-100 = A
   - 70-79 = C
   - 0-59 = F
   - 80-89 = B
   - 60-69 = D

2. Grades are weighted as follows:
   - Interactive Science Notebook 10%
   - Homework/Classwork 15%
   - Labs/Activities/Drawings 25%
   - Quizzes/Tests 40%
   - Midterm/final Exam 10%

INTERACTIVE SCIENCE NOTEBOOK:

Students are required to keep an Interactive Science Notebook (ISN) throughout the course. This is extremely important because it will be your study guide when it is time to take quizzes/tests. Additionally, it will serve as your Laboratory Manuel. It should contain all of your work (goals, notes, class challenges, classwork/homework, labs/drawings, weekly current events, etc.). The ISN will be graded periodically, at specified due dates announced in class. The ISN is a critical part of the course and should exemplify the student’s best work. Colleges often require students to present their laboratory materials from their AP science courses before granting college credit for laboratory. Because of this, students should maintain their ISN in good condition and retain them after the completion of the course.

CHAPTER READINGS

The breadth and scope of material to learn in this class is extensive. Therefore, you must not rely solely on material taught in class to pass quizzes, tests, final exams, and the AP exam. It is IMPERATIVE that you read each chapter assigned, take notes on each chapter, answer the assigned questions at the end of each chapter and complete each chapter’s vocabulary assignment.

MAKE-UP POLICY:

Recognizing the importance of education, students are encouraged to attend school on a daily basis. Students will make up all work missed due to absences when the student returns to school. **It is the student’s responsibility to obtain and make up work.** Make-up tests are always different from the original test and may be made up during Office Hours or after school. **There is a one week maximum time limit to make up a missed test.** Some lab experiences and/or field trips cannot be made up, and the student will do an alternative assignment in those cases. Labs that can be made up will be arranged before school or after school. **Again, it is the student’s responsibility to arrange make up work.**

TUTORING:

Additional help is always available. Regularly scheduled tutoring is available during Office Hours and after school (these times are subject to change for extenuating circumstances). Intervention and remediation is also available during OFFICE HOURS. Additionally, two 4 hour mandatory AP Exam Reviews will be scheduled towards the end of the school year. It is important that students seek the help that they need. It is possible to make arrangements to suit individual schedules and to meet more often for extra help, if it is needed.
PROJECT IBIS:
This is a Volusia County program focused on Environmental Service, Learning & Legacy. It will entail us leaving campus during school hours and conducting field studies in adjunct classrooms (Rose Bay, Lyonia Preserve, etc.). There will be 3 total Project Ibis trips for the school year. Even though field trip permission slips are required these are mandatory field studies. Parents.....we will need chaperones for these field trips!!!!

ENVIROTHON:
Pine Ridge High School participates in the Envirothon which is a yearly competition focusing on environmental content and issues. Although not mandatory for my AP Environmental Science students, if they participate they will earn extra credit in the area they compete.

SERVICE PROJECTS:
We will be conducting service projects throughout the year relating to the environment. More information pertaining to this will be discussed in class.

CLASSROOM POLICIES:
1. Attendance in class is essential for learning. I look forward to seeing each of you every day.
2. Bring all necessary supplies to class.
3. Take care of your personal needs (bathroom, lockers, water) before class begins.
4. Raise your hand for permission before leaving your seat.
5. Keep hands away from all lab supplies and outlets unless a lab is in progress.
6. Class notes are expected to be taken during lectures and other presentations.
7. All work is expected to be turned in on the assigned day. If you are absent you will be allowed 1 day for each day missed to make up work for full credit. Partial credit will be given if the work is turned in before the test on said content. Some lab experiences and/or field trips cannot be made up and the student will be required to do alternative assignments. The grade of “0” will be given if work is not made up before the test on said content. It is your responsibility to obtain the makeup assignment the day you return to class.

PARENTS:
Please do not hesitate to contact me if the need arises.
Phone: 407-328-6800 ext-43598
E-mail: llgowen@volusia.k12.fl.us

ADVANCED PLACEMENT ENVIRONMENTAL SCIENCE (APES)
PINE RIDGE HIGH SCHOOL / 2017-2018

My parents/guardians and I have read the syllabus and agree to the rules/requirements set forth in it. They have also granted me permission to view appropriate PG, Non-Rated and/or PG-13 curriculum related movies.

*Print Student Name_________________________________________________________________________________________

*Student Signature____________________________________________________________________________ Date______________________

*Student email address:________________________________________________________________________________________

*Parent Signature _________________________________________________________________ Date _____________________

*Parent or Guardian email address: ____________________________________________________________

*Parent or Guardian telephone number:__________________________________________________________________________
ADVANCED PLACEMENT ENVIRONMENTAL SCIENCE (APES) TOPIC OUTLINE

The following outline of major topics serves to describe the scope of the AP Environmental Science course and exam. The order of topics in the outline holds no special significance, since there are many different sequences in which the topics can be appropriately addressed in the course. The percentage after each major topic heading shows the approximate proportion of multiple-choice questions on the exam that pertain to that heading; thus the percentage also indicates the relative emphasis that should be placed on the topics in the course.

I. Earth Systems and Resources (10-15%)
   A. Earth Science Concepts: Geologic time scale; plate tectonics; earthquakes; volcanism; seasons; solar intensity and latitude
   B. The Atmosphere: Composition; structure; weather and climate; atmospheric circulation and the Coriolis Effect; atmosphere-ocean interactions; ENSO
   C. Global Water Resources and Use: Freshwater/saltwater; ocean circulation; agricultural, industrial, and domestic use; surface and groundwater issues; global problems; conservation
   D. Soil and Soil Dynamics: Rock cycle; formation; composition; physical and chemical properties; main soil types; erosion and other soil problems; soil conservation

II. The Living World (10-15%)
   A. Ecosystem Structure: Biological populations and communities; ecological niches; interactions among species; keystone species; species diversity and edge effects; major terrestrial and aquatic biomes
   B. Energy Flow: Photosynthesis and cellular respiration; food webs and trophic levels; ecological pyramids
   C. Ecosystem Diversity: Biodiversity; natural selection; evolution; ecosystem services
   D. Natural Ecosystem Change: Climate shifts; species movement; ecological succession
   E. Natural Biogeochemical Cycles: Carbon, nitrogen, phosphorus, sulfur, water, conservation of matter

III. Population (10-15%)
   A. Population Biology Concepts: Population ecology; carrying capacity; reproductive strategies; survivorship
   B. Human Population
      1. Human Population Dynamics: Historical population sizes; distribution; fertility rates; growth rates and doubling times; demographic transition; age-structure diagrams
      2. Population Size: Strategies for sustainability; case studies; national policies
      3. Impacts of Population Growth: Hunger; disease; economic effects; resource use; habitat destruction

IV. Land and Water Use (10-15%)
   A. Agriculture
      1. Feeding a Growing Population: Human nutritional requirements; types of agriculture; Green Revolution; genetic engineering and crop production; deforestation; irrigation; sustainable agriculture
      2. Controlling Pests: Types of pesticides; costs and benefits of pesticide use; integrated pest management; relevant laws
   B. Forestry: plantations; old growth forests; forest fires; forest management; national forests
   C. Rangelands: Overgrazing; deforestation; desertification; rangeland management; federal rangelands
   D. Other Land Use
      1. Urban Land Development: Planned development; suburban sprawl; urbanization
      2. Transportation Infrastructure: Federal highway system; canals and channels; roadless areas; ecosystem impacts
      3. Public and Federal Lands: Management; wilderness areas; national parks; wildlife refuges; forests; wetlands
      4. Land Conservation Options: Preservation; remediation; mitigation; restoration
      5. Sustainable Land-use Strategies:
   E. Mining: Mineral formation; extraction; global reserves; relevant laws and treaties
F. Fishing: Fishing techniques; overfishing; aquaculture; relevant laws and treaties
G. Global Economics: Globalization; World Bank; Tragedy of the Commons; relevant laws/treaties

V. Energy Resources and Consumption (10-15%)
A. Energy Concepts: Energy forms; power; units; conversions; Laws of Thermodynamics
B. Energy Consumption
   1. History: Industrial Revolution; exponential growth; energy crisis
   2. Present Global Energy Use
   3. Future Energy Needs
C. Fossil Fuel Resources and Use: Formation of coal, oil, and natural gas; extraction/purification methods; world reserves and global demand; synfuels; environmental advantages/disadvantages of sources
D. Nuclear Energy: Nuclear fission process; nuclear fuel; electricity production; nuclear reactor types; environmental advantages/disadvantages; safety issues; radiation and human health; radioactive wastes; nuclear fusion
E. Hydroelectric Power: Dams; flood control; salmon; silting; other impacts
F. Energy Conservation: Energy efficiency; CAFE standards; hybrid electric vehicles; mass transit
G. Renewable Energy: Solar energy; solar electricity; hydrogen fuel cells; biomass; wind energy; small-scale hydroelectric; ocean waves and tidal energy; geothermal; environmental advantages/disadvantages

VI. Pollution (25-30%)
A. Pollution Types
   1. Air Pollution: Sources-primary and secondary; major air pollutants; measurement units; smog; acid deposition-causes and effects; heat islands and temperature inversions; indoor air pollution; remediation and reduction strategies; Clean Air Act and other relevant laws
   2. Noise Pollution: Sources; effects; control measures
   3. Water Pollution: Types; sources, causes, and effects; cultural eutrophication; groundwater pollution; maintaining water quality; water purification; sewage treatment/septic systems; Clean Water Act and other relevant laws
   4. Solid Waste: Types; disposal; reduction
B. Impacts on the Environment and Human Health
   1. Hazards to Human Health: Environmental risk analysis; acute and chronic effects; dose response relationships; air pollutants; smoking and other risks
   2. Hazardous Chemicals in the Environment: Types of hazardous waste; treatment/disposal of hazardous waste; cleanup of contaminated sites; biomagnification; relevant laws
C. Economic Impacts: Cost-benefit analysis; externalities; marginal costs; sustainability

VII. Global Change (10-15%)
A. Stratospheric Ozone: Formation of stratospheric ozone; ultraviolet radiation; causes of ozone depletion; effects of ozone depletion; strategies for reducing ozone depletion; relevant laws and treaties
B. Global Warming: Greenhouse gases and the greenhouse effect; impacts and consequences of global warming; reducing climate change; relevant laws and treaties
C. Loss of Biodiversity
   1. Habitat Loss; pollution; introduced species; endangered and extinct species
   2. Maintenance through conservation
   3. Relevant laws and treaties