ADVANCED PLACEMENT ENVIRONMENTAL SCIENCE is designed to be the equivalent of a one-semester, introductory college course in environmental science. Environmental science is a multi-disciplinary field that includes elements of biology, chemistry, and geology, but stresses the analysis and laboratory skills necessary in each of these areas of scientific study. A college science course differs significantly from the usual high school course in respect to the textbook used, the range and depth of topics covered, the laboratory work done by students, and the time and effort required. Major areas of study in environmental science include ecosystems, energy, air, land, populations, and water quality. Topics throughout the course are integrated using themes described by the AP Environmental Science curriculum. Although most of the content is presented during class, students are expected to cover additional materials on their own.


TOPIC OUTLINE: Class topics are based on those outlined by the College Board. Detailed information about these topics and the AP examination can be found online at http://apcentral.collegeboard.com/apc/public/repository/ap-environmental-science-course-description.pdf.

I. Earth Systems and Resources (10-15%)
   A. Earth Science (geologic time scale; plate tectonics; earthquakes; volcanism; seasons; latitude)
   B. The Atmosphere (composition; structure; weather and climate; atmospheric circulation)
   C. Global Water Resources and Use (freshwater/saltwater; agricultural, industrial, and domestic use; conservation)
   D. Soil and Soil Dynamics (formation; composition; physical and chemical properties; main soil types; erosion; soil conservation)

II. The Living World (10-15%)
   A. Ecosystem Structure (populations and communities; ecological niches; keystone species; 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 (human population dynamics, population size, impacts of population growth)

IV. Land and Water Use (10-15%)
   A. Agriculture (feeding a growing population, controlling pests)
   B. Forestry (tree plantations; old growth forests; forest fires; forest management; national forests)
   C. Rangelands (overgrazing; deforestation; desertification; rangeland management; federal rangelands)
   D. Other Land Use (urban land development, transportation infrastructure, Public lands, mining, fishing)

V. Energy Resources and Consumption (10-15%)
   A. Energy Concepts (energy forms; power; units; conversions; Laws of Thermodynamics)
   B. Energy Consumption (Industrial Revolution; exponential growth; energy crisis; present global energy use)
   C. Fossil Fuel Resources and Use (formation of coal, oil, and natural gas; world reserves and global demand)
   D. Nuclear Energy (nuclear fission process; nuclear fuel; electricity production; nuclear reactor types)
   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; geothermal)

VI. Pollution (25-30%)
   A. Pollution Types (air, noise, water, solid waste)
   B. Impacts on the Environment and Human Health (acute/chronic; hazardous chemicals, economic impacts)

VII. Global Change (10-15%)
   A. Stratospheric Ozone (formation; UV radiation; ozone depletion; relevant laws and treaties)
   B. Global Warming (greenhouse gases and greenhouse effect; impacts; relevant laws and treaties)
   C. Loss of Biodiversity
   D. Habitat loss; overuse; pollution; introduced species; endangered and extinct species

CLASS MATERIALS:
- 1-subject notebook exclusively for A.P. Environmental Science (required)
- 3-ring binder (optional)

Note: many students use separate binders for 1st and 2nd semesters.
TESTS: This course is designed to prepare students for the national AP Environmental Science exam on Monday May 2, 2016. Therefore, the tests used in this course will attempt to reflect the style and difficulty level of the actual AP Environmental Science exam. Because of the difficulty of the course, students may not always obtain high percentages on the test. Diligence with lab and homework should help to offset lower than normal test grades.

WORK:
1. Homework is regularly assigned. It is designed to provide background for lectures and labs, as well as practice on skills learned in class.
2. Students should save all returned papers and organize them in their binders.
3. Students are responsible for gathering work or scheduling a time for lab or test make-ups when they are absent.

EVALUATION:
Marking period grades are based on total points earned in each of the categories listed below. It is the student's responsibility to monitor his or her grade online and report any errors. Progress reports are always available upon request.

All assignments are to be turned in on time. Assignments turned in after the due date will face a 20% grade reduction. Assignments turned in one week past the due date will be graded but no credit will be given. After one week, a zero in the electronic gradebook will indicate that the assignment was not turned in.

Grades are based on the following:

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>WEIGHT</th>
<th>FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNIT TESTS</td>
<td>50%</td>
<td>~every 3 weeks</td>
</tr>
<tr>
<td>LABS / PROJECTS / PORTFOLIOS</td>
<td>25%</td>
<td>~every week</td>
</tr>
<tr>
<td>QUIZZES</td>
<td>10%</td>
<td>~one per week</td>
</tr>
<tr>
<td>HOMEWORK</td>
<td>10%</td>
<td>~2-3 assignments per week</td>
</tr>
<tr>
<td>PARTICIPATION*</td>
<td>5%</td>
<td>~daily/weekly</td>
</tr>
</tbody>
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*A portion of the Participation grade is one hour of environmental stewardship per marking period.

Semester grades are calculated from the two marking period grades and a comprehensive final exam.

1st MP = 40 %  2nd MP = 40 %  EXAM = 20 %

GENERAL RULES:
1. Follow all Royal Oak HS guidelines regarding attendance and conduct.
2. Show respect for everyone and everything in the classroom.
3. Listen whenever anyone speaks. Disrespectful behavior will not be tolerated.
4. Come to class prepared, on time, and ready to work each day.
5. Work that you turn in should your own. Although you may work with a group on certain assignments, the work you submit should be unique.
6. No food or drink (other than water) is allowed in the classroom.
7. Inappropriate language or topics of conversation will not be tolerated.

INDIVIDUAL HELP: You may always receive help before or after school, or during C lunch. A sign-up list is available in the Room 314.

CONTACT INFORMATION:
Phone: (248) 435-8500, ext. 1004          Email: barnettd@royaloakschools.org

NOTES:
A Google Classroom site for AP Environmental Science is available (albeit as a work in progress). The site serves as a clearinghouse for information relating to the class, including calendars, assignments, presentations, and other resources.

SUMMER WORK will be assigned for the 2015-2016 in June, 2015. Examples of past summer assignments include reading a relevant book, field work, etc.