

# Environmental Science

## 2025-2026 Syllabus

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### Part 1: Course Information

#### Instructor Information

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#### Course Description

Environmental Science is a one semester, freshman level course that seeks to prepare students for Biology I and the Biology I End of Course Exam. The course provides students with an opportunity to develop an understanding of interrelationships in the natural world. In addition, it allows them to identify natural and man-made environmental problems and design and evaluate possible solutions for these problems.

#### General Education/High School Pathway Area

- Students may take Environmental Science to fulfill their graduation requirements or it may be counted as an elective course if a student has already completed Biology I, Chemistry or Physics and a third Science class.

#### Textbook & Course Materials

**Required Text:** *Tennessee Environmental Science*, SAVVAS Learning Company, 2021. ISBN 13-978-1-4183-3635-6

#### Recommended Texts & Other Readings or Resources.

- Other readings may be made available either online or in print during the course.

#### Materials

- 3 Ringed notebook (1.5 to 2 inches) with college ruled paper.
- Pencil or Pen (dark blue or black ink)
- Colored Pencils
- Ruler
- Transparent tape
- School Glue or glue stick
- Scissors

- Colored Markers
- Poster Board

## **Course Structure**

Course content will be delivered through lecture, discussion, textbook assignments, multimedia presentations, library and internet research, laboratory investigations, student presentations, and other methods.

In order for students to succeed in this course it is vital that they devote much time to reading the text and completing all assignments.

## **Online Resources**

Online textbook: SAVVAS Tennessee Environmental Science (access through Clever)

Animal Diversity Web: <https://animaldiversity.org/>

Crash Course Ecology on YouTube: [Crash Course Ecology](#)

PhET Interactive Simulations: <https://phet.colorado.edu/>

NASA Global Climate Change website: <https://climate.nasa.gov/>

HHMI Biointeractive: <https://www.biointeractive.org/>

Genetic Science Learning Center: <https://learn.genetics.utah.edu/>

Great Smoky Mountains National Park: <https://www.nps.gov/grsm/index.htm>

Science News Explores: <https://www.snexplores.org/>

Annenburg Learner: [The Habitable Planet: A Systems Approach to Environmental Science](#)

National Geographic: <https://www.nationalgeographic.com/>

Nature Works: <https://nhpbs.org/natureworks/nw4.htm>

Tennessee Wildlife Resources Agency: <https://www.tn.gov/twra.html>

United States Environmental Protection Agency: <https://www.epa.gov/>

## **Part 2: Student Learning Outcomes**

### **EVSC.LS2: Ecosystems: Interactions, Energy, and Dynamics**

1) Using a variety of data sources, construct an explanation for the impact of climate, latitude, altitude, geology, and hydrology patterns on plant and animal life in various terrestrial biomes.

2) Develop an explanation of behavioral and physical adaptations organisms have for life in aquatic habitats with varying chemical and physical features.

3) Using mathematical models, support arguments regarding the effects of biotic and abiotic factors on carrying capacity for populations within an ecosystem.

- 4) Compare and contrast production (photosynthesis, chemosynthesis) and respiratory (aerobic respiration, anaerobic respiration, consumption, decomposition) processes responsible for the cycling of matter and flow of energy through an ecosystem. Using evidence, construct an argument regarding the importance of homeostasis in maintaining these processes in ecosystems.
- 5) Use a mathematical model to explain energy flow through an ecosystem. Using the first and second laws of thermodynamics, construct an explanation for: A) necessity for constant energy input; B) limitations on energy transfer from one trophic level to the next; and, C) limitations on number of trophic levels that can be supported.
- 6) Evaluate the interdependence among major biogeochemical cycles (water, carbon, nitrogen, phosphorus) in an ecosystem and recognize the importance each cycle has in maintaining ecosystem stability.
- 7) Examine stability and change within an ecosystem by using a model of succession (primary or secondary) to predict impacts of disruption on an ecosystem.

**EVSC.LS4: Biological Change: Unity and Diversity**

- 1) Construct an explanation based on scientific evidence for mechanisms of natural selection that  
  
result in behavioral, anatomical, and physiological adaptations in populations.
- 2) Justify claims with scientific evidence that changes in environmental conditions lead to  
  
speciation and extinction.
- 3) Evaluate the impact of habitat fragmentation and destruction, invasive species, overharvesting,  
  
pollution, and climate change on biodiversity (genetic, species, and ecosystem).
- 4) Engage in argument from scientific evidence critiquing effectiveness of the Endangered Species  
  
Act. Give specific examples to support your argument.

**EVSC.ESS2: Earth's Systems**

- 1) Research the development of the theory of plate tectonics. Use the theory to construct an explanation for how changes in Earth's crust cause mountain formation, volcanoes, earthquakes, and tsunamis. Provide evidence to support the explanation using information pertaining to plate boundary types (divergent, convergent, transform).
- 2) Considering Earth's position within our solar system, use a model to demonstrate the causes of day length, seasons, and climate.
- 3) Analyze the composition of the Earth's atmosphere. Obtain information and use graphs to observe patterns regarding stability and change within the Earth's atmospheric composition (O<sub>2</sub>, N<sub>2</sub>, CO<sub>2</sub>, etc.) over geologic time.
- 4) Differentiate weather and climate and analyze and interpret data examining naturally occurring patterns pertaining to each.
- 5) Plan and carry out an investigation examining the chemical and physical properties of water and the impact of water on Earth's topography. Analyze data and share findings.
- 6) Develop a model to explain soil formation and the flow of matter in the rock cycle.

**EVSC.ESS3: Earth and Human Activity**

- 1) Research Earth's natural resources (renewable and nonrenewable resources). Construct an argument from evidence supporting the claim that a particular type of resource is important for humans.
- 2) Interpret graphical data representing global human population growth over time. Look for patterns within this data and construct possible explanations for the patterns. Revise the explanations as needed based on research.
- 3) Obtain and evaluate information regarding demographics for a variety of countries. Construct an explanation for varying fertility rates and life expectancies between countries and throughout human history. Taking into account demographic transition, predict what trends are likely to occur in various countries over time.
- 4) Gather, organize, analyze, and present data on current land use trends by humans. Based on analysis, predict future trends.
- 5) Plan and carry out an investigation examining best management practices in water usage, agriculture, forestry, urban/suburban development, mining, or fishing and communicate findings.

- 6) Use a model to make predictions regarding the impact of topsoil loss due to erosion resulting from human activity. Design, evaluate, and revise a solution to preserve topsoil.
- 7) Construct an argument including claim, evidence, and scientific reasoning regarding the impact of the Green Revolution on agricultural practices, food availability, and the environment.
- 8) Research information on the environmental impacts of genetically modified organisms and engage in debate regarding pros and cons of this agricultural technology.
- 9) Evaluate ecosystem services provided by forest ecosystems. Construct an explanation for human impact on these services.
- 10) Using scientific data, analyze the effectiveness of conservation versus preservation efforts. Obtain and communicate information on organizations involved in protecting natural resources.
- 11) Define problems and suggest solutions associated with using, conserving, and recycling energy and mineral resources taking into account economic, social, and environmental costs and benefits.
- 12) Ask questions about technology needed to develop alternative energy sources and obtain information from various sources to answer those questions.
- 13) Analyze and interpret data on the effects of land, water, and air pollution on the environment and on human health. Propose solutions for minimizing pollution from specific sources.
- 14) Obtain and communicate information on environmental laws pertaining to the regulation of pollution and on regulatory agencies. Provide a specific example of how a given business/industry would comply with such regulations.
- 15) Evaluate current methods of waste management and reduction and design possible improvements.
- 16) Obtain, evaluate, and communicate scientific information tracing the breakdown of ozone caused by chlorofluorocarbons and the effectiveness of efforts to address this environmental problem.
- 17) Using mathematics and computational thinking, analyze data linking human activity to climate change. Design solutions to address human impacts on climate change.

18) Use mathematics to calculate ecological footprints. Develop a personal plan for reducing your impact on the environment.

**EVSC.ETS2: Links Among Engineering, Technology, Science, and Society**

1) Engage in argument from evidence on the role engineering and technology play in a sustainable human society.

2) Research and communicate information on an environmental science career. Analyze the role of society, engineering, technology, and science in that career.

**EVSC.ETS3: Applications of Science**

1) Plan and carry out an investigation of a local ecosystem to assess human impacts. Based on your findings, design and evaluate a solution to minimize impacts.

**You will meet the objectives listed above through a combination of the following activities in this course:**

Lecture, class discussion, laboratory activities, library and Internet research, student presentations, and other group and individual activities. In order for students to succeed in this course it is vital that they participate in all class activities and complete all assignments.

## Part 3: Topic Outline/Schedule

	Unit Number	Unit Title	Standards
First 9 weeks	1	Introduction to Environmental Science (3 weeks)	EVSC.LS2.1 EVSC.LS2.3 EVSC.LS2.4 EVSC.LS2.5 EVSC.LS2.6 EVSC.ESS2.1 EVSC.ESS2.3 EVSC.ESS3.1 EVSC.ESS3.5 EVSC.ESS3.6 EVSC.ESS3.9 EVSC.ESS3.10 EVSC.ESS3.11 EVSC.ETS2.1 EVSC.ETS3.1
	2	Ecology (4 weeks)	EVSC.LS2.1 EVSC.LS2.2 EVSC.LS2.3 EVSC.LS2.4 EVSC.LS2.5 EVSC.LS2.6 EVSC.LS2.7 EVSC.LS4.1 EVSC.LS4.2 EVSC.LS4.3 EVSC.ESS2.1 EVSC.ESS2.3 EVSC.ESS3.1 EVSC.ESS3.5 EVSC.ESS3.6 EVSC.ESS3.9 EVSC.ESS3.10 EVSC.ESS3.11 EVSC.ETS2.1 EVSC.ETS3.1
	3	Humans and the Environment (2 weeks)	EVSC.LS2.1 EVSC.LS2.2 EVSC.LS2.3 EVSC.LS2.4

			EVSC.LS2.5 EVSC.LS2.6 EVSC.LS2.7
2nd 9 weeks	4	Earth's Resources (4.5 weeks)	EVSC.ESS2.1 EVSC.ESS2.2 EVSC.ESS2.3 EVSC.ESS2.4 EVSC.ESS2.5 EVSC.ESS2.6 EVSC.ESS3.1 EVSC.ESS3.4 EVSC.ESS3.5
	5	Toward a Sustainable Future (4.5 weeks)	EVSC.ESS3.1 EVSC.ESS3.4 EVSC.ESS3.5 EVSC.ESS3.6 EVSC.ESS3.9 EVSC.ESS3.10 EVSC.ESS3.11 EVSC.ESS3.12 EVSC.ESS3.13 EVSC.ESS3.14 EVSC.ESS3.15 EVSC.ESS3.16 EVSC.ESS3.17 EVSC.ETS2.1 EVSC.ETS2.2

## Part 4: Grading Policy

### Graded Course Activities

Student assignments will be weighted as follows:

40 %	Daily classwork and homework
20%	Chapter Tests and Projects
20%	Laboratory activities and hands on activities
20%	Quizzes



Final grades assigned for this course will be based on the percentage of total points earned and are assigned as follows:

Letter Grade	Percentage	Performance
A	90-100%	Excellent Work
B	80-89%	Good Work
C	70-79%	Average Work
D	60-69%	Poor Work
F	0-59%	Failing Work

### **Late Work Policy**

Be sure to pay close attention to deadlines—there will be no make up assignments or quizzes, or late work accepted without a serious and compelling reason and instructor approval.

### **Viewing Grades in ASPEN (optional)**

Points you receive for graded activities will be posted to the ASPEN Grade Book. Click on the My Grades link on the left navigation to view your points.

Your instructor will typically update the online grades 5 days following the completion of an activity. You will see a visual indication of new grades posted on your ASPEN home page under the link to this course.

## **Part 5: Course Policies**

### **Attend Class**

Students are expected to attend all class sessions as listed on the course calendar.

### **Participate**

Students are encouraged to participate in all classroom activities. Failure to participate in class activities will adversely affect a student's grade.

## Build Rapport

If you find that you have any trouble keeping up with assignments or other aspects of the course, make sure you let your instructor know as early as possible. As you will find, building rapport and effective relationships are key to becoming an effective professional. Make sure that you are proactive in informing your instructor when difficulties arise during the semester so that they can help you find a solution.

## Complete Assignments

Assignments must be submitted by the given deadline or special permission must be requested from the instructor *before the due date*. Extensions will not be given beyond the next assignment except under extreme circumstances.

All discussion assignments must be completed by the assignment due date and time. Late or missing discussion assignments will affect the student's grade.

## Incomplete Policy

Under emergency/special circumstances, students may petition for an incomplete grade. An incomplete will only be assigned in the event of an extreme emergency. All incomplete course assignments must be completed within a time period to be determined based upon the number of missing or incomplete assignments. An extreme emergency may include illness or an accident involving the student or the death of an immediate family member. A family or school trip **WOULD NOT BE CONSIDERED AN EMERGENCY**. Students should complete assignments **BEFORE** such an event.

## Academic Dishonesty Policy

Academic dishonesty includes such things as cheating, inventing false information or citations, plagiarism and helping someone else commit an act of academic dishonesty. It usually involves an attempt by a student to show possession of a level of knowledge or skill that he/she does not possess.

A student suspected of academic dishonesty may receive an oral reprimand. Parents may be contacted. A grade of zero may be given in which case the student may be allowed to retake a different version of the test or redo the assignment. A student may also be referred to administration for disciplinary action.

# Student Testing Code of Ethics and Security

It is important for you as a student to know that the following guidelines are to be strictly followed. This year the TNReady EOC test

will count at least 15% of your final semester grade. Your work on this test is very important and it deserves your best effort.

I understand that during testing on the days of the assessment, I am responsible for:

- Not having any electronic devices on me or in my purse/backpack/pockets
  - Including but not limited to cell phones, smart phones, smart watches, etc. **during testing or during breaks.**
  - Best practice is for students to leave devices at home or in their lockers on the day of testing.
  - If I am caught with a device during testing or during breaks, my test may be nullified, resulting in a zero as at least 15% of my semester grade, and any school level disciplinary action as deemed appropriate by the administration.
- Trying my best on the test
  - If I do not attempt to test (I give **no answers or randomly answer** questions) my test score may be nullified, resulting in a zero as at least 15% of my semester grade, and any school level disciplinary action as deemed appropriate by the administration.
  - The testing administrators and proctors in the testing environment will determine if no answers or random answering is taking place.
  - I will focus and put forth effort on the test .
- Being honest and not cheating
  - If I am caught cheating (taking pictures of the test, writing down and passing answers, talking to other students, looking on other computers, using software outside the testing platform), my test may be nullified, resulting in a zero as at least 15% of my semester grade, and any school level disciplinary action as deemed appropriate by the administration.

**Important Note:** Any form of academic dishonesty, including cheating and plagiarism, may be reported to the office of student affairs.

**Course policies are subject to change.** It is the student's responsibility to check for corrections or updates to the syllabus. Any changes will be posted in the classroom.