Indiana Academy for Science, Mathematics, and Humanities
SCI04327 AP Environmental Science I Fall 2025

Instructor: Donald Winslow, Ph.D.
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Office hours: Monday 9-10 AM, 1-3 PM
Wednesday 9-10 AM, 1-3 PM
Thursday 1-3 PM (generally by Zoom)
Friday 11 AM – noon, 1-2 PM
These office hours are suggestions for when you might find me in my office. However, you are welcome to check to see if I am available at other times. Also, I may not always be in my office during the stated office hours, so it is best to make an appointment if you want to be sure to catch me.

Description: From the course catalog (**https://academy.bsu.edu/catalog/**):
Prerequisite: One year biology
Co-requisite: AP Environmental Science Lab (SCI04327L)
Credit: 1.5 credits
Offered: Fall/Spring Sequence

The study of environmental science concerns itself with the interaction between humans and the ecosystems in which we live and work. The course focuses on the determination of environmental quality through a series of laboratory experiences dealing with soil, water, and air resources. There is a concentration on problems having to do with population, pollution, agriculture, resource management and land use. An integrated approach to the issues facing us is emphasized. The course will use a problem-based learning approach and will incorporate a service learning component. Students will prepare for and are encouraged to take the AP Environmental Science exam in May.

Student learning outcomes:
Upon completing this course, students will be able to describe the ways in which human societies interact with their environments, apply the concepts of resource limitation and sustainability to discuss the complex issues involved in the resolution of environmental conflicts, and practice field and laboratory analytic techniques to assess environmental quality.

Course materials
Friedland, Andrew; and Rick Relyea. 2023. *Environmental Science for the AP Course*, 4th ed., Bedford, Freeman & Worth: New York.

Molnar, William. 2011. *Laboratory Investigations for AP Environmental Science*, 2nd ed., People's Education, Saddle Brook, NJ.

Nash, Roderick Frazier. 1990. *American Environmentalism*, 3rd ed., McGraw-Hill: USA.

We will supplement these texts with other relevant material throughout the semester. You should also have a lab and field notebook (separate from your lecture notes) for recording data for lab exercises.

Please note that some aspects of this course may need to be changed during the semester, so this syllabus is subject to revision. If the syllabus is revised during the semester, the updated syllabus will be posted on Canvas. Please refer to Canvas for updated information.

Assignments:

Assignment	Points	Number	Total
Quizzes	~5	~10	50
Workbook activities	4-10	~7	50
Presentations	50	2	100
Lab reports	10	10	100
Homework	10	5	50
Lecture exam	100	4	400
Lab notebook	100	1	100
Comprehensive final exam	150	1	150
Total			1000

Grading Scale:

100 – 93% = **A**	< 90 – 87% = **B+**	< 80 – 77% = **C+**	< 70% = **D***
< 93 – 90% = **A-**	< 87 – 83% = **B**	< 77 – 70% = **C**	
	< 83 – 80% = **B-**		

Grades will be posted on Canvas and synced to Powerschool. If I am late posting grades, you can estimate your current grade in the course by adding all the points you have earned or anticipate earning from all assignments. There are 1000 points available in the course, so each point is worth 0.1%. Please make an appointment to talk with me if you are concerned about your grade or uncertain about your standing in the course.

Attendance

Official Indiana Academy attendance statement:

Attendance is mandatory. Students may receive excused absences at the professional discretion of the school nurse, the associate director of mental health services, the associate director of college counseling and student engagement, the director of academic affairs, and the executive director of the Indiana Academy. Unexcused absences occur when students miss class without prior approval from the aforementioned designated school officials. Continued absences (both excused and unexcused) from Academy classes increase the likelihood of unsuccessful completion.

Alongside steady attendance, students are expected to maintain consistent healthy habits of decorum, respect, and kindness towards their classmates, instructors, and teaching assistants. When students fail to meet these classroom behavioral standards and academic habits, it is the expectation faculty engage appropriately to bring quick and immediate resolution. When students consistently fail to meet these behavioral standards and academic habits in the classroom, an administrative consequence ladder will be adopted, and recorded, in attempt to administratively address, engage, and rectify ongoing challenges.

Winslow's attendance statement:

Please arrive on time to class. The instructor is required to take attendance so that all students are accounted for. If you arrive late to class, someone might start checking to see where you may be. If you are late, you may need to remind the instructor to change the absence to tardy. This will disrupt our workflow and possibly the workflow of others, so please try to avoid being late.

If you miss lecture for any reason, you are responsible for obtaining any notes, announcements, reading material, or assignments from the instructor or a classmate. If an unavoidable conflict, emergency, or illness prevents you from attending class or completing an assignment on time, please inform the instructor as soon as possible (preferably beforehand). The Academy and not the instructor determines whether an absence is excused or unexcused. No direct grade penalty is assessed for an absence. However, you will have a much greater chance of success if you are present as much as possible.

Safety
Please familiarize yourself with lab safety protocols and perform procedures with care. Because we hold class in a science lab, no food, gum, or drinks can be brought into the classroom. Your work area should always be free of clutter and only have the necessary materials (pens/pencils, notebook, etc.). If there are glassware breakage or equipment problems, please notify the instructor immediately to ensure proper safety and equipment protocols are followed.

Please stay near the group during field excursions. Wear sturdy shoes and protective clothes. Watch your step. Watch for moving vehicles.

Academic conduct
It is important to prepare for each class meeting by completing the reading and any assignments that are due. Assignments should be submitted on Canvas or in class, depending on the assignment. Although some activities such as labs may be completed in pairs or groups of students, each student is individually responsible for submitting assignments with original writing (not copied from your lab mate). You are encouraged to discuss answers to lab activities with other class members, but the wording should not be the same. Do not share word processing files with each other, but make sure each student has access to the raw data for analysis.

You are expected to conduct yourself according to the Indiana Academy Student Handbook (https://academy.bsu.edu/handbook/), especially the Code of Conduct and the section on Academic Integrity. On writing assignments, please be sure to use your own wording and cite all sources of information, whether from the Internet or otherwise. If you are not sure how to cite something, ask the instructor. Note that language copied verbatim from a book, website, another student's paper, or any other source is considered plagiarism unless it is in quotation marks and cited. Plagiarism is a form of academic dishonesty. Please do not plagiarize or cheat in any other way. An infraction may result in a 0 for the assignment. Also, the instructor is required to report any ethics violations to the Academic Integrity Board.

Artificial intelligence (AI) technology
Technologies referred to as "artificial intelligence" (AI) are becoming increasingly salient in our lives, sometimes with more emphasis on artificial than on intelligence. The original Turing test (Turing, 1950) for artificial intelligence is to engage in dialogue with what we would now call a "chatbot". If the discourse is indistinguishable from that of a human, then it is considered artificial intelligence. Modern large language models such as ChatGPT (OpenAI, 2022) exemplify this approach by stringing together words from human writing to sound intelligent (without always being intelligent).

These tools can be very useful, from simple spellchecks to generating computer code. As we adopt these technologies, however, it is important to verify that information obtained is correct and to avoid presenting as our own work that was produced by software or anyone else. We can avoid these pitfalls

if we use the auto-generated content as a starting point but not as a finished product. Find the original sources of information and cite those. ChatGPT has a reputation for making up references that don't exist, so don't rely on it.

The papers you write for this course will be based on your own research, so you should expect to write them yourself rather than try to develop a prompt to direct ChatGPT or another language model to do so. You may use spellcheck and grammar tools to proofread your writing.

References and resources on AI:

OpenAI. 2022. ChatGPT, Version 3.5. OpenAI, accessed 12 May 2024 at https://chatgpt.com/.

Turing, Alan M. 1950. Computing machinery and intelligence. *Mind* LIX(236):433-460, https://doi.org/10.1093/mind/LIX.236.433, accessed 12 May 2024 at https://academic.oup.com/mind/article/LIX/236/433/986238?login=false.

Classroom conduct

Please be considerate of other classmates. Keep any devices not used for classroom activities silenced or off. Your phone should be put away if it's not being used for class. Phones, tablets, and laptops can be used in class for class activities, but repeated use for non-class activities may result in a loss of that privilege. Please treat each other with respect and refrain from annoying behavior. Do not interrupt another student or the instructor. If you are having difficulty getting a word in, you can raise your hand. Examples of improper conduct include having extended conversations, working on assignments for other courses, sleeping, etc. Serious and/or chronic problems may be cause for dismissal from the course. A calculator (but not a phone) may be used for exams. Please treat each other with respect and refrain from annoying behavior. Do not interrupt another student or the instructor. If you are having difficulty getting a word in, you can raise your hand. Examples of improper conduct include having extended conversations, working on assignments for other courses, sleeping, etc. Serious and/or chronic problems may be cause for dismissal from the course.

IA wireless device policy

Pursuant to Indiana Code 20-26-5-40.7, The Indiana Academy for Science, Mathematics and Humanities prohibits student use of wireless communication devices for non-instructional purposes in the classroom. As such, any and all portable wireless devices, that have the capability to provide voice, messaging, or other data communication between two or more parties, must only be used for academic purposes directly tied to the classroom activity or related educational task. Exceptions to this wireless device policy are eligible through academic accommodations, individualized education programs, or with instructor approval permitting the use of a wireless device for justification related to health, safety, and/or well-being.

The improper use of a wireless device in an active classroom setting is subject to disciplinary action including but not limited to; a verbal warning, temporary seizure of said device by a school official, an unexcused absence for the class in question, written communication to parent/guardian, among other elevated consequences for repeated improper use.

Late work

If you are late submitting an assignment because you missed class, see the section above on attendance. If an absence is excused by the Academy, the instructor will make every reasonable effort to ensure you have the opportunity to make up any assignments associated with the absence. If you are late submitting an assignment associated with an unexcused absence or for a reason unrelated to missing class, the instructor may grade the assignment as time allows.

If an exam is missed because of an excused absence, the instructor will make every reasonable effort to ensure you have the opportunity to make it up. If the absence is unexcused, a make-up exam may be allowed at the instructor's discretion. If a lab is missed, it may be difficult to arrange for a student to make it up due to supplies and logistical constraints. If the absence was excused, the instructor may need to substitute an alternate activity.

Library research
Through your association with Ball State University, you have access to an academic research library with many useful materials. This includes online access to many peer-reviewed scientific journals through bibliographic databases to which Ball State subscribes. To access these databases, go to https://www.bsu.edu/library, and scroll down to "Databases". The databases are listed in alphabetical order by the first letter. Two good ones to try are Academic Search Complete under "A" and JSTOR under "J". When you click on one of these databases, you will be prompted to log into your Ball State account. You can search for articles on particular topics and then access the full text of many articles from the journal publishers' websites. Also, if you are logged into https://myballstate.bsu.edu, try searching on Google Scholar at https://scholar.google.com. You should see "Find it at Ball State" for references available through university subscriptions.

Student accommodations and special circumstances
If you have an IEP or a 504 that provides accommodations, have emergency medical information to share, or need special arrangements in case the building needs to be evacuated, please make an appointment to speak with me as soon as possible.

If you are struggling with study habits, stress, and/or personal issues, I encourage you to discuss the situation with your SLC and/or contact the Guidance Office for help in addressing these issues so that you can thrive at the Academy. Many resources are available for students, and important contact information is listed below:

For guidance: Meg Wright (mewright@bsu.edu), phone:765-285-7407; office: WA182.
To find a tutor: Meg Wright (mewright@bsu.edu), phone:765-285-7407; office: WA182.
For mental health: Dr. Mindy Wallpe (mcwallpe@bsu.edu), phone: 765-285-5483; office: WA 160B.

INDIANA ACADEMY BENIFICENCE STATEMENT:
Ball State University aspires to be a university that attracts and retains outstanding faculty, staff, and students. Ball State is committed to ensuring that all members of the campus community are welcome through our practice of valuing the varied experiences and worldviews of the people whom we serve. We promote a culture of respect and civil discourse as evident in our Beneficence Pledge. As a reflection of Ball State's commitment to respect, civil discourse, and the Beneficence Pledge, inclusiveness at the Indiana Academy emerges as one of the priorities of our living and learning community. We strive to exist together respectfully and compassionately, creating an environment where every member can thrive.

Schedule (subject to revision as needed)

11 August	Introduction to course, scientific method, safety (lab, field, building)	This syllabus
12 August	Lab safety worksheet, science practices worksheet	
13 August	Ecosystems and trophic interactions, food chains & food webs, 10% "rule"	
15 August	Scope of environmental science, AP Classroom, biomes	
18 August	Big ideas in environmental science, aquatic and terrestrial biomes	

19 August	Collect samples for AP Lab 1 Net primary productivity of aquatic plants
20 August	Hydrologic (water) cycle, carbon cycle, primary productivity
22 August	Nitrogen and phosphorus cycles, Community ecology: species interactions
25 August	Community ecology: community attributes such as species diversity
26 August	Collect final data for AP Lab 1 Net primary productivity of aquatic plants
27 August	Biodiversity measurement and conservation
29 August	Learning Without Limits Day, climate change, island biogeography, ecosystem services
3 September	Ecological tolerance and natural disruptions to ecosystems, evolution
5 September	Adaptation, ecological succession
8 September	Review session for exam 1
9 September	AP Lab 6 Soil microbial activity and soil organic matter
10 September	Complete measurements for AP Lab 6
12 September	Exam 1 on AP Units 1 and 2 (communities, ecosystems, biomes, and biodiversity)
15 September	Populations, generalist and specialist species, *K*- & *r*-selected species
16 September	AP Lab 2 Species diversity, AP Lab 3 Habitat loss & transformation
17 September	Mark/recapture method, dispersion, population dynamics, invasive species, age structure
19 September	Population simulation exercise, predator-prey simulation
22 September	Resource availability and limits to growth, carrying capacity
23 September	AP Lab 4 Population estimation, tree identification walk
24 September	Dall sheep life tables and survivorship curves
26 September	Total fertility and human population dynamics, demographic transition
29 September	Review session for exam 2
30 September	AP Lab 5 Human population ecology: Cemetery demographics
1 October	Exam 2 on Unit 3 (population)
3 October	Plate tectonics
8 October	PSAT
9 October	Tuesday labs meet on Thursday, geology lab
10 October	Soil formation and erosion
13 October	Soil composition and properties
14 October	Collect soil samples
15 October	Earth’s atmosphere
17 October	Global wind patterns
20 October	Watersheds, solar radiation and Earth’s seasons
21 October	Soil analysis lab, AP Lab 7 Physical and chemical properties of soil
22 October	Estimate % sand, silt, and clay for AP Lab 7 on properties of soil
24 October	Earth’s geography and climate, ocean currents, El Niño and La Niña
27 October	Review for Unit 4 exam, Earth systems and resources
28 October	Unit 4 examination
29 October	Conservation approaches (species and ecosystem), land and water use
31 October	Youth Environmental Leadership Summit at Indiana University
3 November	The tragedy of the commons
4 November	Meteorology lab, dendrochronology lab
5 November	Forests and forestry
7 November	Clearcutting
10 November	Course evaluations, sustainable forestry
11 November	AP Lab 8 Soil compaction in agriculture, plant seeds
12 November	The Green Revolution and impacts of agricultural practices

14 November	Meat production methods, overfishing, aquaculture	
15 November	AP registration deadline	
17 November	Irrigation methods and pest control methods	
18 November	Measure taproots from AP Lab 8, forest survey lab	
19 November	Integrated pest management, sustainable agriculture	
21 November	Mining, ecological footprints	
1 December	Urbanization, methods to reduce urban runoff	
2 December	AP Lab 9 Sustainability, EN-ROADS	
3 December	Review session for Unit 5 examination	
5 December	Unit 5 examination	
8 December	Essay writing practice	
9 December	AP Lab 19 Carbon sequestration in urban trees	
10 December	Rubric setting	Essay grading exercise
12 December	Review for final exam	
15-18 December	Final Exam Week	