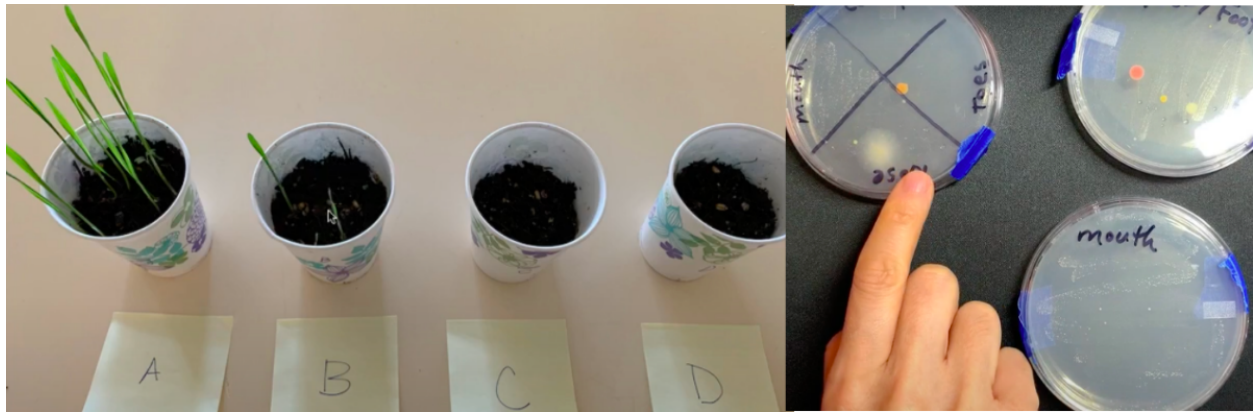




Diversity Domination Syllabus

INSTRUCTOR INFORMATION

Please go to your course and access the 'Course Home' for detailed instructor information.

CONTACT INFORMATION

I am available by email. Please feel free to contact me if you have any questions regarding your assignments. Every effort will be made to reply to you immediately. I make a point to respond to emails within 24 hours on weekdays and 48 hours on weekends.

COURSE REQUIREMENTS

All learners must have computer and internet access. Participants in online classes must be comfortable with the basic functions of word-processing software, including GOOGLE DOCS, Kami extension (to write on PDF), and Adobe Scan (to take pictures of printed work). Information about Kami and Adobe Scan can be found in the course orientation assignment.

This is an online course. In each unit, students will be expected to participate in discussions and proceed through the Weekly Agenda which may include videos, PowerPoints, virtual labs, research, data gathering and analysis, assignments, or projects. Online simulations will be included in this exploration and may require tech support. Learners will be encouraged to show understanding in creative projects.

COURSE DESCRIPTION

In this course, you will explore principles of evolutionary biology and ecology. Topics include evolutionary relationships, natural selection, biodiversity & health, and interactions in ecosystems.

Activities include hominid skull comparisons, comparing embryos and homologous structures of different animals, designing an experiment to test the effects of soil contamination on plants, creating a food web, and growing bacteria from your own body!

This is a great course to help learners transition to High School Biology.

COURSE GOALS

By the end of this lab, students will be able to:

- Identify similarities and differences in fossil samples to identify relationships between species
- Provide evidence that supports Darwin's theory of evolution and concept of common descent
- Compare and contrast the embryonic development of different species
- Compare and contrast homologous structures of different species
- Differentiate between homologous structures and analogous structures
- Discuss the levels of organization and interactions in nature and differentiate between organisms, populations, communities, and ecosystems

- Collect and grow bacteria samples in a petri dish
- Differentiate between producers, primary, secondary, tertiary consumers, and decomposers • Differentiate between a food chain and a food web
- Create a food web that describes the transfer of energy in an ecosystem
- Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment
- Provide examples of how biodiversity benefits an ecosystem
- Model how physical changes to an environment can affect the well-being of living organisms
- Design a controlled experiment in order to collect quantitative and qualitative data

NGSS SCIENCE STANDARDS:

Below are the NGSS Standards addressed in this course:

- MS-LS4-1. Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.
- MS-LS4-2. Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.
- MS-LS4-3. Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.
- MS-LS4-4. Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.
- MS-LS4-6. Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.
- MS-LS1-4. Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.
- MS-LS3-1. Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.
- MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
- MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.
- MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
- MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
- MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

REQUIRED TEXTS

All reading materials are available online, but will also be provided as links through the course website.

COURSE OUTLINE:

Block 1: Evolutionary Relationships

- ☐ Discussion - Evolution

- ☐ Evolutionary Relationships Reading Review Questions
- ☐ Hominid Skull Comparisons

Block 2: Evolutionary Relationships (con't)

- ☐ Embryology
- ☐ Homologous Structures
- ☐ Discussion - Evidence

Block 3: Natural Selection

- ☐ Natural Selection Video Questions
- ☐ Natural Selection Reading Review Questions
- ☐ Natural Selection Gizmo Lab

Block 4: Change, Biodiversity and Health

- ☐ Change, Biodiversity... Reading - **OPTIONAL** Review Questions
- ☐ Lab: Effects of Soil Contamination - Begin/Set-Up
- ☐ Biodiversity and the Irish Potato Famine
- ☐ Discussion - Share

Block 5: Ecological Interactions

- ☐ Ecological Interactions Reading Review Questions
- ☐ Lab: Energy and Matter in an Ecosystem
- ☐ Lab: Bacteria of the Body (Part A - set up)

Block 6: Analysis of Labs

- ☐ FINISH: Bacteria of the Body Lab
- ☐ FINISH: Effects of Soil Contamination Lab
- ☐ Discussion: Your results

Block 7: Final Project

- ☐ Final Project
- ☐ Final Discussion and Course Survey

RESOURCES/MATERIALS USED IN THIS COURSE

This course adapts Medical Life Science labs from the [Health and Science Pipeline Initiative](#) (HASPI). It also includes YouTube videos that support the content and a Natural Selection Gizmo in block 3.

METHODS OF INSTRUCTION

This is an online course, and while there is flexibility in how and when you do assignments, it is best to log in and complete work each day according to the posted pacing schedule. Each BLOCK in a course is worth about 1 week of work during the regular semester. You can find our suggested pacing guide at [ileadonline.org](#) under 'CALENDARS'. It is highly recommended that learners follow the pacing schedule posted. Please be sure to check in with your teacher of record (coach/EF/Guide/ES) for guidance with

scheduling.

This course uses project-based learning to encourage an authentic, developed appreciation of the topics covered. That means that while it may include quizzes and some traditional assessments, the bulk of the coursework focuses on projects that require learners to display their learning in a thorough and creative manner. If you are struggling to complete your work or you need some assistance with an alternate schedule or workload, please contact me as soon as possible. I am more than happy to help support your success in the class!

LEARNER EXPECTATIONS

The learner is expected to participate in the course via e-mail, discussion boards (or other communication) with the facilitator, by reading the assigned readings, submitting assignments, and completing and submitting original work.

Learners are expected to check their course and email accounts every day and complete work on time as assigned with designated dates and times.

Learners are expected to communicate with their instructor and each other in a respectful manner. Please follow the guidelines below:

1. **Make sure identification is clear in all communications.** If you are emailing or messaging your instructor or each other, please be sure they know who you are and what class you're in. That really helps with clear communication.
2. **Review what you wrote and try to interpret it objectively.** When we speak face to face and are misunderstood, we have an on-the-spot opportunity to rephrase our words. In writing, we must strive twice as hard to be understood, as we do not have the benefit of modifying or elaborating in real-time. All caps ("I'M SHOUTING") and exclamation points ("Give me a break!!!") can be misinterpreted as intense anger or humor without the appropriate context.
3. **If you wouldn't say it face to face, don't say it online.** When you're working online, you're safe behind a screen, but that's no excuse to be ill-mannered or say things you would never say in public.
4. **Use emoticons when appropriate.** In casual chatroom settings, emoticons can help convey feelings that may otherwise get lost in translation, including humor, exasperation, exhaustion, and even confusion. These aren't the best choices for formal assignments or projects though.
5. **Respect others' voices and be kind.** We all come from different backgrounds and have our own stories. Assume the best of each other and always be kind in your communication.
6. **Remember, if it's on the internet, it's everywhere.** Don't share personal information about yourself in a public online forum, especially something that could put your safety or security at risk.
7. **Practice Patience:** All your facilitators are doing their best to grade work in a timely manner. We also want to give you meaningful feedback, which takes some time. If you feel like there has been an error or an assignment was missed, please reach out with your name and class and we will do our best to sort it out.

GRADING

Each assignment is given a specific number of points. The number of points earned by the student is determined and a percentage is calculated. The raw score is recorded in the grade book.

An overall grade in the course will be determined according to your school's grading scale.

SUBMITTING ASSIGNMENTS

All work must be submitted to Brightspace, our learning management system. This is very important for record-keeping and compliance. You have access to directions on how to do this in the 'Course Resources' folder of this class and in your Orientation class. If you need any help submitting work please reach out to your instructor and we will make time to ensure that you're able to turn in work to Brightspace.

HONESTY AND PLAGIARISM

Plagiarism of any sort is prohibited.

According to the Merriam-Webster online dictionary, to "plagiarize" means:

- to steal and pass off (the ideas or words of another) as one's own
- to use (another's production) without crediting the source
- to commit literary theft
- to present a new and original idea or product derived from an existing source

Please review [THIS RESOURCE](#) for more information on plagiarism.

Any plagiarized work will be given a zero and referred to your EF/COACH/GUIDE for review. From there we will work with you to support you as best we can.

PRIVACY POLICY

All work submitted is the property of the author and is not available to anyone not in the class. If work is to be submitted or viewed outside of this website, I will obtain permission from the author. [FERPA Info](#)