

NGSS Biology



Welcome to the amazing world of Biology. Together we will explore energy and matter, animals and plants, microorganisms and macromolecules, native species and invasive species, omnivores and oogenesis, decomposition, deoxyribonucleic acid, and succession. To do this we will need to be scientific: curious, clever, critical and considerate. Here are our ground rules as a team:

- Periods 1,2,4 are Co-taught with Ms. Guensler (twice the support)
- Be Present mentally
- Be prepared-chromebook charged, bring your unit packet, bring a pen/pencil
- An electronic calendar is located in Canvas with daily assignments. Daily warm ups is another place to find nightly assignments.
- **Students are given roughly 30 minutes to start assignments in class.**
- **Classwork not finished becomes homework.**
- Missing assignments will appear red in the gradebook **however you must complete it to make the red box disappear. Assignments turned in one day late earn a 2 or 3 out of five and more than one day late will receive 1 point up to the Unit Assessment. The day of the unit test is the final day to turn in late work for that unit.**
- **If you are absent, it is your responsibility to check the daily warm up, calendar and module on Canvas to find out what was done in class.** You have the same number of days to make up the assignment as you were absent.
- Do not work on classwork/homework until work time during the last thirty minutes of class.
- Any assignment completed after it is collected/checked is marked late, excluding absences.
- **Do not work on yesterday's assignment during instruction time. You will fall behind**
- Complete work for understanding, not just for completion. The work builds to the assessments.
- If you make a mistake, miss an assignment or deadline, own up to it and find out what can be done!
- Avoid being absent often; it's hard to catch up once you get behind.
- **Have confidence in your ability to change your behavior for the better.**
- Pay attention to class lecture notes (all notes are posted on Canvas; they will help you on your assignments).
- Keep an eye on your grade using Homelink! This is online for you (and family) to check often. Ask politely if something doesn't look right in the gradebook.
- Grades will be updated regularly, the due dates in Homelink and the Canvas Calendar are accurate.
- **Ask for help at the first sign of trouble!!**
- **Only small snacks in class, no eating during labs.**
- **Phones will be on silent or airplane mode, placed in the phone holder on the wall, and remain until instructed by the teacher near the end of the period. Phones used during class will be held until the end of the period (followed by an email home).**
- **No Air Pods/headphones unless directed by the teacher.**

- **Parents:** In the event of an emergency, please call the office as students will not have phone access until the end of the period.

Technology Expectations

- Students are expected to use district provided Google login credentials, not personal gmail accounts.
- Students are expected to use chromebooks for class/homework assignments and labs. No games, shopping or chat/Google Hangouts. Stay focused!
- Improper use of chromebooks will result in you having your device screen locked. Repeated offenses will result in not using technology in class unless required by the teacher.
- Phones are not to be used during class unless instructed. Unchecked phone use is the biggest distraction in the classroom. Students are instructed to retrieve their phones prior to the bell for security purposes.

Grading Framework

Grades may be checked online.

They may also be posted in class.

- A 90% and above
- B 80% – 89%
- C 70% - 79%
- D 60%-69%
- F Below 60%

Categories

- 40% Formative: (Classwork/homework, Quizzes)
- 60% Summative Assessments (Tests, Labs)

Academic Honesty & Plagiarism

Cheating is the unauthorized use of another person's work with the intent to deceive or subvert a clearly defined set of instructions. Unless stated, all assignments in this class are individual assignments. All parties involved will receive zero credit on the assignment, an academic referral will be sent to the office and student(s) may still be required to complete the work. **Copying from Google/AI and pasting answers into assignments and warm ups is plagiarism.**

Science Supplies

Required Every Day:

Pen/Pencil and paper

Colored Pencils

Chromebook (charged)

Science Notebook/Binder

Dry Erase Marker

2023-2024 NGSS Biology Course Outline & Details



Quarter 1

Ecosystems and Sustainability

Unit 1: Exp. Design, Energy and Flow in Ecosystems
 Unit 2: Molecules of Life/Biomolecules
 Unit 3: Cycling of Matter in Ecosystems
 Unit 4: Human Impacts on Ecosystems

→ **Department Midterm Exam**

Quarter 2

Universality of All Life

Unit 5: DNA and the Code of Life
 Unit 6: DNA to Protein
 Unit 7: Inheritance and Variation in Life
 Unit 8: Natural Selection and Evolution

→ **Cumulative District Final Exam**

Unit 1: Exp. Design, Energy and Flow of Ecosystems

<u>HS-LS 2-1</u>	Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales
<u>HS-LS 2-2</u>	Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.
<u>HS-LS 2-3</u>	Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions
<u>HS-LS 2-4</u>	Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem.

Unit 2/3: Biomolecules/Cycling of matter in Ecosystems

<u>HS-LS1 -5</u>	Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.
<u>HS-LS1 -6</u>	Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.
<u>HS-LS1 -7</u>	Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.
<u>HS-LS2 -3</u>	Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.
<u>HS-LS2 -4</u>	Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem.
<u>HS-LS2 -5</u>	Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.
<u>HS-ESS 2-6</u>	Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.

Unit 4: Human impacts on Ecosystems

<u>HS-ESS 2-6</u>	Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.
<u>HS-ESS 3-1</u>	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
<u>HS-ESS 3-2</u>	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
<u>HS-ESS 3-3</u>	Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
<u>HS-ESS 3-4</u>	Evaluate or refine a technological solution that reduces impacts of human activities on natural systems
<u>HS-ESS 3-5</u>	Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems.
<u>HS-ESS 3-6</u>	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
<u>HS-LS2 -7</u>	Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

Unit 5/6: DNA and the Code of Life/Protein Synthesis

<u>HS-LS 1-1</u>	Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells.
<u>HS-LS 1-2</u>	Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.
<u>HS-LS 1-3</u>	Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.
<u>HS-LS 1-4</u>	Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.

Unit 7: Inheritance and variation in Life

<u>HS-LS 3-1</u>	Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.
<u>HS-LS 3-2</u>	Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors.
<u>HS-LS 3-3</u>	Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.

Unit 8: Natural Selection and Evolution

<u>PE: HS-L S4-1</u>	Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence
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<u>PE:</u> <u>HS-L</u> <u>S4-2</u>	Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.
<u>PE:</u> <u>HS-L</u> <u>S4-3</u>	Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.
<u>PE:</u> <u>HS-L</u> <u>S4-4</u>	Construct an explanation based on evidence for how natural selection leads to adaptation of populations.
<u>PE:</u> <u>HS-L</u> <u>S4-5</u>	Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species
<u>PE:</u> <u>HS-L</u> <u>S4-6</u>	Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity

<u>HS-ESS</u> <u>1-6</u>	Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history.
<u>HS-LS2</u> <u>-6</u>	Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.
<u>HS-ESS</u> <u>2-7</u>	Construct an argument based on evidence about the simultaneous coevolution of Earth's systems and life on Earth.