Naperville North High School Biology Syllabus 2024/2025

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Office Phone: 630.420.6513 **Department Chair: Mr. Jim Konrad**

District Mission	To educate students to be self-directed learners, collaborative workers, complex thinkers, quality producers, and community contributors.
Science Department Mission	At Naperville North High School, our mission is to provide high-quality, innovative, and engaging science education that fosters deep understanding, critical thinking, and a lifelong passion for scientific inquiry. Grounded in the Next Generation Science Standards (NGSS), our curriculum and teaching approach empower students to develop the knowledge, skills, and attitudes necessary to thrive in a rapidly changing world. We are dedicated to nurturing curiosity, collaboration, and scientific literacy, preparing our students to become informed citizens who can contribute to solving local and global challenges through the application of scientific principles.
Course Description	This course is a study of fundamental biological concepts based on the Next Generation Science Standards. Students will evaluate evidence from experiments and technology used by scientists to understand the nature of biology. Concepts and skills are reinforced by a strong emphasis on hands-on laboratory experiences and the integration of other branches of science. Constructivist methods of teaching are employed to ensure the best possible comprehension and retention of science concepts.
Course Textbook & Resources	Open SciEd
Course Standards & Weights	**Life Science Performance Expectations** **HS-LS1-1.** 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. **HS-LS1-2.** Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms **HS-LS1-3**. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. **HS-LS1-5.** Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy. **HS-LS1-6.** 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. **HS-LS1-7.** 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. **HS-LS2-3**. Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions. **HS-LS2-4**. Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem. **HS-LS2-5.** Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere. **HS-LS2-1.** Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales. **HS-LS2-2**. Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales. **HS-LS2-6.** 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. **HS-LS2-7**. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity. **HS-LS2-8**. Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce. **HS-LS4-6.** Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity. **HS-LS1-4**. Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms **HS-LS3-1**. Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring. **HS-LS3-2.** 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. **HS-LS3-3.** Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population. **HS-LS4-1.** Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence. **HS-LS4-2.** 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.

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HS-LS4-3. 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.
HS-LS4-4. Construct an explanation based on evidence for how natural selection leads to adaptation of populations.
HS-LS4-5. 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.

SEL Standards

1C.4b. Apply strategies to overcome obstacles to goal achievement.
2B.4b. Demonstrate respect for individuals from different social and cultural groups.
3B.4a. Evaluate personal abilities to gather information, generate alternatives, and anticipate the consequences of decisions.

Units of Study:

Scientific Method & Characteristics of Life	Ecology	Matter and Energy
Inheritance and Variation	Natural Selection	

Grade Calculation Definitions

Students will be provided with multiple and varied opportunities to demonstrate mastery of learning standards. Although varied in content, all courses will include examples of practice and evidence of learning:

- **Evidence of Learning**: Tasks or assessments where feedback is provided to the student and considered evidence of a student's level of proficiency on a given standard or skill. This may include, but is not limited to formative tasks that provide insights on areas for growth as well as summative tests, projects and/or performances. In this course, specific examples include ***exit slips, labs, presentations, quizzes, and transfer task assessments.***
- **Practice**: Tasks that are connected to course standards and learning targets that promote the development of skills and/or knowledge that will be assessed, but where feedback is not provided. This may include, but is not limited to daily readings, note taking, practice exercises and tasks essential to the learning process. In this course, specific examples include ***exercises on biological concepts through the student unit workbooks***.

Grading Disbursement

Semester grades for all classes (prior to the final exam) will be calculated by a weighted average. As part of the calculation for the overall semester grade, final exams/projects will not exceed 15% of the semester grade.

A = 100-90%, B = 89-80%, C = 79-70%, D = 69-60%, F = 59-0%

Semester Grade:

- Coursework = 85%
  Evidence of Learning = 45% Transfer Tasks/Assessments, 45% Assignments, 10% Practice
- Final Exam = 15% *Final Exam Format:* Exam

Grading Practices

Grades communicate each student's progress toward mastery of goals/standards for the course.

- Infinite Campus Symbols/Comments:
  - A score of "Missing" (M) will indicate an assessment has not been turned in and the comments section will include a specific date by which students can still submit. After that date, a zero (0) will be recorded.
  - Any score may also have a comment indicating the due date, turned in, late, reassessment eligibility including the timeline and/or reassessment final scores.
  - A zero indicates that no attempt was made by the student. If a legitimate attempt is made on an assessment and practice work has been completed in a consistent and timely manner (*completing 85% of practice listed in Infinite Campus.*), a score of 50% will be the lowest possible grade.

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- Late Work:
  - Evidence of Learning work submitted after the original due date cannot be penalized more than a total of 10% and can be submitted for credit up to 5 days after the original due date.
  - Practice Work is not accepted for credit after the due date.
- Other:
  - No extra credit will be issued.

D203 AI Belief Statement

At Naperville North High School, we strive to build a learner's mindset in all students, developing qualities such as adaptability, communication, critical thinking, and global citizenship. Generative Artificial Intelligence (AI), offers new opportunities to engage with important technology relevant to the future that also raises significant educational considerations. AI tools provide unique ways to engage students in the learning process, hence we encourage our staff to guide students in using AI responsibly. Teachers have the authority to establish guidelines for AI use in their classrooms, setting clear expectations for how AI can be used on learning tasks. Concurrently, we recognize that reliance on AI risks replacing genuine student engagement and original thought, undermining the attributes we aim to cultivate. Striking a balance between leveraging AI tools effectively and maintaining educational standards is crucial to the learning experience of each student.

Academic Integrity Code

District 203 students are challenged to address the academic process enthusiastically, diligently, and most importantly, honestly. It is the responsibility of our students, teachers, and administration to uphold the fundamental academic values of honesty, responsibility, fairness, respect, and trust. The integrity of our district's academic programs is built upon these principles.

Academic integrity violations include cheating, plagiarism, self-plagiarism or copy infringement, obtaining or providing an unfair advantage, using a writing service and/or AI in place of original work unless specifically authorized by staff, falsification of documents, unauthorized access to records, and inappropriate collaboration, whether intentional or unintentional. The classroom teacher and administration will collaborate and exercise professional judgment in determining academic integrity violations.

Reassessment Policy

The purpose of reassessment is to allow students to demonstrate mastery of course standards in which they remain deficient. Higher reassessment grades will replace the original assessment score, but will not exceed 85%.

- Practice work is not eligible for reassessment.
- Evidence of Learning work may be eligible for reassessment. Refer to the chart below for eligibility:

☐ The assessment included multiple opportunities for feedback and improvement in the process for the final product OR formative assessments are aligned to standards, allow students to practice in the same assessment format, and gain feedback for improvement before the summative assessment.	☐ There was timely and consistent completion of practice work and formative assessments, as listed in Infinite Campus ☐ A one-time performance on an assessment does not reflect the student's level of proficiency leading up to the assessment. ☐ The evidence assessment score is below 85%.
Not eligible for reassessment	Eligible for reassessment if all three statements above are true.

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	Reassessment Parameters: ● The reassessment opportunity will require designated learning experiences that demonstrate readiness as assigned by the teacher. ● Reassessments MUST be completed within 5 school days of the student receiving feedback unless otherwise determined by the instructor. The reassessment deadline should be communicated in an IC comment. ● The final reassessment score will be capped at 85%.
Student Communication	● You are encouraged to communicate with your teacher regarding questions. ● Teachers make every effort to respond to emails and phone calls within 24 hours during the workweek. ● The best way to communicate with teachers is through email; however, if you haven't received a response within 48 hours, please resend the email or call their voicemail. Your email may have been filtered.
Additional Resources for Support	● You can make an appointment with your teacher should you need additional instruction or support in learning material. ● You can attend peer tutoring in the Lit Center during lunch periods to receive extra support or to work on assignments. ● You can drop in to work with a peer tutor during lunch periods or before school in the Literacy Center.
Parents or Guardians Partnership	Naperville North believes in a collective partnership with parents/guardians which provides students the best opportunities for success. Some ways parents/guardians can support their student's learning are: ● Actively check Infinite Campus for their student's grades. ○ Infinite Campus is a tool to monitor student progress until the final course grade is posted. ○ Monthly progress grades are posted and represent the current grade of a student in the course at that moment in time. ● Discuss missing assignments, reiterate due dates, help organize folders, materials, assignment notebooks, and review upcoming projects and assessments.