



Course Syllabus	
Franklin High School	2019-2020
Course Title: NGSS Biology	Grade Level(s): 10
Prerequisites: N/A	
Course description: This lab-based course covers the foundational principles of modern life science as outlined in the Next Generation Science Standards (NGSS). We will learn the content and applications of Biology by using science and engineering practices utilized by professionals in STEM fields.	
Standards: This course is based on the Next Generation Science Standards (NGSS). We will address the NGSS performance expectations for Life Science and some of the performance expectations for Earth and Space Science as well as Engineering and Technology. For a more detailed look at the specific standards, see this short link: http://bit.ly/NGSS_Bio The following headings provide a thematic overview of the standards for the year. 1) Structure and Function 2) Inheritance and Variation of Traits 3) Matter and Energy in Organisms and Ecosystems 4) Interdependent Relationships in Ecosystems 5) Natural Selection and Evolution.	
Schedule of topics/units covered: Unit 1 - Ecosystems and Biodiversity Unit 2 - Macromolecules Unit 3 - Cells to Organisms Unit 4- Genomics Unit 5 - Evolution Unit 6 - Matter, Energy, Climate Change	
Differentiation/accessibility strategies and supports (TAG, ELL, SpEd, other): Students Receiving Special Education Services: Accommodations indicated by Individual Education Plans and 504 plans will be made in cooperation with students, special education professionals and parents. Some standard accommodations include the use of available technology, additional scaffolding, and extended time to write. ELL: Strategies used in this class to address ELL needs include those found in Sheltered Instruction Observation Protocol (SIOP) such as: •Posting clearly defined content and language objectives	

- Emphasizing key vocabulary (pre-teaching with visuals)
- Using a variety of techniques to make language comprehensible (clear explanation of tasks, slower speech, increased wait time for students responses, gestures)
- Scaffolding techniques like think-alouds to support student understanding
- Allowing for frequent opportunities for student interaction (pair-shares, small/large group work)
- Using activities that integrate reading, writing, speaking and listening
- Providing regular feedback and conducting assessment of student comprehension and learning

TAG:

Assignments and activities are designed to allow students to work to and beyond their ability, if so desired, and include reader responses, dialogue journals, levels of questioning, text annotation, open-ended learning tasks and writing prompts, flexible grouping, and Socratic Seminar. Frequent teacher feedback is given to students, along with suggestions for further exploration of academic content and development of reading and writing skills.

Final proficiencies:

This class will be graded using a proficiency-based system. A student is proficient in a skill if they can demonstrate and repeat a thorough knowledge, understanding, and performance of the skill. The goal is to prepare all students for success in AP classes, required State assessments, college, and careers.

Proficiency will be assessed using 4 criteria, described below. All summative assignments will be categorized into a criterion and assessed based on a rubric for that criterion, available in students' science notebooks after week 2 and on all summative assignments. All scores will be on a 1-4 scale and will be averaged within each criterion to calculate the score. Then, all 4 criteria will be averaged to calculate the final grade. The grading scale information is on the next page.

1. Constructing Explanations and Communicating Scientific Information

At the end of each unit, students should be able to:

- a. explain scientific knowledge and the evidence supporting that scientific knowledge
- b. create or interpret scientific models, and connect the model to the evidence
- c. obtain, analyze and evaluate scientific information

2. Asking Questions and Identifying Problems

At the end of the 11th grade year, students should be able to:

- a. explain a scientific question and the connection between that question and content in class
- b. formulate a testable hypothesis and make predictions
- c. explain the independent variable, dependent variable, and how to measure each
- d. explain an engineering problem and the criteria and constraints specific to that problem

3. Analyzing and Interpreting Data and Designing Solutions

At the end of the 11th grade year, students should be able to:

- a. present data in tables, graphs and other relevant forms
- b. explain conclusions based on data through claim, evidence, reasoning
- c. evaluate whether the criteria and constraints of an engineering design challenge were met by the design proposed
- d. propose novel questions based on the results of an experiment

4. Applications of Science in Society

At the end of the 11th grade year, students should be able to:

- a. explain the ways in which Biology is applied to solve problems and answer questions in the real world
- b. discuss and evaluate the ethical impacts of how Biology is applied to solve problems and answer questions
- c. document the work of others and sources of information used

Assessment (pre/post)/evaluation/grading policy:

Overall semester grade is calculated using the average of the four individual criterion scores (listed above in “Final Proficiencies.” Synergy/StudentVue will not display a D, such that a grade of 2.0 is passing even if outside of progress reports, it displays as an F.

At the end of each semester (January and June), averages convert to letter grades determined by the following:

A	4.0-3.6
B	3.5-3.0
C	2.5-2.9
D	2.0-2.4
F	< 1.9

Behavioral expectations:

- All voices are to be respected and heard in this class. Scientific discourse involves discussing concepts and ideas that often have no one correct answer, with many stakeholders who have firm views on what is the best course of action. Thus, we will practice discussing a variety of science topics throughout the school year.
- All rules of student conduct outlined in the student handbook are, of course, in effect in this class. We pay particular attention to rules pertaining to the policies related to cell phones and academic dishonesty/plagiarism. Science is built upon the work of many others and citing your sources is one way to acknowledge their contribution to your growth and learning.

Additionally, I expect students to:

Strive to be...

<p>Thoughtful</p>	<p>We celebrate the diversity and recognize the varied learning needs of all students. We put time and effort into planning lessons that meet the needs of all students. We are engaged in the classroom and encourage student participation. We process complex information in a variety of ways.</p>
<p>Respectful</p>	<p>We respect the diverse learning needs of all students. We follow directions and classroom rules. We do not use racist, sexist, or homophobic language. We keep distractions, such as electronic devices put away during class time, unless otherwise directed.</p>
<p>Organized</p>	<p>We are present and prepared for class. We bring all necessary materials to class. We keep track of assignments, deadlines, and class activities.</p>
<p>Neighborly</p>	<p>We only leave class when we are directed to do so. We treat the learning environment as if it were our own. We clean up after ourselves and our group. We help when we see someone in need.</p>
<p>Generous</p>	<p>We share our resources and materials. We offer a fresh start to students who are struggling. We help each other learn and grow.</p>
<p>If problems arise as a result of disregard for behavioral expectations, these are the consequences:</p> <ol style="list-style-type: none"> 1. Warning 2. Talk to you; privately if possible 3. Conference with you and school support team / Level 1 Report documentation 4. Call Home 5. If these steps do not resolve the problem, a conference with school administrator will be necessary / Level 2-3 Referral 	
<p>Safety issues and requirements: Students are given a safety agreement to review and sign with their parent/guardian. This agreement includes the following:</p> <ul style="list-style-type: none"> • Perform only those experiments and procedures authorized by the instructor. • Be properly prepared to conduct all experiments. Pay attention to laboratory safety instructions and be sure you understand what you are doing before you proceed. Know the location of the SDS and be familiar with what the sheets indicate for the hazardous chemicals being used. • Conduct yourself in a responsible manner at all times. No horseplay, or other fooling around should ever occur in the laboratory. • Wear appropriate eye protection, as directed by the teacher, whenever working in the laboratory or in field experiments such as rocket launches. Safety goggles must be worn 	

during hazardous activities involving caustic/corrosive chemicals, heating of liquids, and other activities that may injure the eyes.

- Keep hands away from face, eyes, and clothes while using solutions, specimens, equipment, or materials in the laboratory.
- Splashes and fumes from hazardous chemicals present a special danger to people who wear contact lenses. Therefore, it is preferable for students to wear regular glasses (inside splash-proof goggles, when appropriate) rather than contact lenses during all class activities or purchase personal splash-proof goggles and wear them whenever exposure to chemicals or chemical fumes is possible.
- Gloves must be worn at all times. Students with open skin wounds on hands must wear gloves or be excused from the laboratory activity.
- Know the locations of fire extinguishers, gas shutoff, fire blanket, eyewash, safety shower, and first aid kit. Emergency exits and aisles must be kept clear at all times.
- Confine or securely tie hair that reaches to the shoulders. Roll long sleeves above the wrist. Long, hanging necklaces, bulky jewelry, and excessive or bulky clothing should not be worn in the laboratory.
- Do not eat food, drink beverages, or chew gum in the laboratory area.
- Work areas and equipment should be kept clean and tidy at all times. Bring only materials specified by your instructor to the work area. Other items such as books, purses, backpacks, etc. must be stored in an area designated by the instructor.
- Dispose of laboratory waste as instructed by the teacher. Use separate, designated containers (not the wastebasket) for the following:
 - Matches, litmus paper, wooden splints, toothpicks, etc....
 - Broken and waste glass
 - Rags, paper towels, or other absorbent materials used in the cleanup of flammable solids or liquids
 - Hazardous/toxic liquids and solids
- Read chemical labels very carefully. Make sure that you have the correct substance in the correct concentration. Check the label twice before removing any of the contents. Follow the instructor's safety instructions for handling hazardous materials.
- Do not return chemicals to their original containers unless you are specifically instructed to do so.
- Always work in a well-ventilated area when using volatile substances or hazardous vapors.
- Handle all chemicals with care. Never taste a chemical. Check odors when instructed to do so by gently wafting some of the vapor toward your nose by hand.
- Never take chemicals, supplies, specimens, or equipment out of the laboratory without the knowledge and consent of the instructor.
- Never work alone in the laboratory without adult supervision.
- Do not enter the laboratory stockroom(s) or storage areas without specific permission from your instructor.
- Transport chemicals, materials and equipment properly as directed by the instructor.
- Human body fluids pose potential dangers and can only be used under strict teacher supervision.

- Always clean the laboratory area before leaving.