

NGSS Biology
Franklin High School
2019-2020

Instructor: Mr. Barrentine

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All assignments will be available digitally on Google Classroom.

Course Description:

Welcome to NGSS Biology. 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.

Students will work in small teams to complete three major investigations during the course contributing data to ongoing research projects.

1. Students will explore ecosystem health using arthropods as an indicator species.
2. Students will investigate natural selection through blue-green algae that live in extreme environments.
3. Students will collaborate to engineer a food system, and will measure the changes their choices make in efficiency of food production.

Additionally, there will be a focus on how we can utilize the tools of biology to solve problems identified at the local level, from air pollution to climate change, and how those local solutions can contribute to global progress.

Course Objectives:

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.

Assessment and Grading:

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.

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.

Your overall semester grade is calculated using the average of the four individual criterion scores. Please note that 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:

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|---|-------------|
| A | 3.5+ |
| B | 3.0+ |
| C | 2.5+ |
| D | 2.1+ |
| F | 2.0 or less |

<p>Explain: Constructing Explanations and Communicating Scientific Information</p> <p>At the end of each unit, students should be able to:</p> <ol style="list-style-type: none"> explain scientific knowledge and the evidence supporting that scientific knowledge create or interpret scientific models, and connect the model to the evidence obtain, analyze and evaluate scientific information 	<p>Design: Asking Questions and Identifying Problems</p> <p>At the end of the year, students should be able to:</p> <ol style="list-style-type: none"> explain a scientific question and the connection between that question and content in class formulate a testable hypothesis and make predictions using correct scientific reasoning explain the independent variable, dependent variable, and how to measure each identify appropriate controls and replication for the experiment in question explain an engineering problem and the criteria and constraints specific to that problem evaluate whether the criteria and constraints of an engineering design challenge were met by the design proposed
<p>Analyze: Analyzing and Interpreting Data and Designing Solutions</p> <p>At the end of the year, students should be able to:</p> <ol style="list-style-type: none"> present data in tables, graphs and other relevant forms explain conclusions based on data through claim, evidence, and using correct scientific reasoning propose novel questions based on the results of an experiment 	<p>Reflect: Applications of Science in Society</p> <p>At the end of the year, students should be able to:</p> <ol style="list-style-type: none"> explain the ways in which science and engineering are applied to solve problems and answer questions in the real world discuss and evaluate the ethics of how Biology is applied to solve problems and answer questions document the work of others and sources of information used

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. 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.

Technology Policy:

Phones need to be **off and away** in the classroom, unless otherwise directed. According to school policy, if a student has a phone out in class, the phone will be collected and brought down to the VP Office. The student can pick up the phone at 3:15 in the VP office. The second time, the parent is called to pick up the phone at the end of the day. For parents, if you need to contact your student during instructional time, please call the main office: 503-916-5140.

Academic Honesty:

Academic honesty is expected from all students. Cheating or plagiarism will not be tolerated. Examples include: 1. Plagiarism: the intentional or unintentional failure to give clear credit to the author of words or ideas not your own.

- Using cheat notes or looking at someone's paper during an exam.
- Giving or receiving confidential information about exams or assessments.
- Keeping knowledge of dishonorable conduct from teacher or administrator.