

Syllabus and Course Outline AeroStem 2022-2023

Course Name : **Biology**

Teacher Name : **Mr. J. Morse**

Teacher Contact information:

Email : jmorse@aerostem.org

Prep Period Time : **Period 0**

Room : **3**

Welcome to Biology Class!

Core Subject Description:

This subject is designed to provide a general background for the understanding of the science of Biology. This course develops an appreciation of the beauty of life from its simplest composition at the molecular level to the global spectrum of complex ecological issues. It discusses Genetics, Cytology, Photosynthesis, Cellular Respiration, Populations, Ecology, and Evolution. Issues, concerns, and problems with life are also included. It also deals with the basic principles and processes in the study of biology. It covers life processes and interactions at the cellular, organism, population, and ecosystem levels. This course makes heavy use of Media, using the Discovery Platform, and other forms of media as needed.

General Standards:

The learner demonstrates an understanding of basic concepts and processes in Biology as deepened by other disciplines to analyze/solve problems critically, think innovatively / creatively, and make informed decisions to enhance the integrity and wellness of the human person, protect the environment and conserve resources to sustain the quality of life.

Materials:

If there is any difficulty obtaining these materials, please let your teacher know as soon as possible.

- Colored pencils (suggested) District/Personal Laptop
- Earbuds or Headphones Highlighters (any color)
- Notebook, pencils, and erasers Personal sanitizers and face mask

Grading Procedures:

Quarter grades will be calculated from cumulative points per quarter from weighted categories. Semester grades will be calculated with each quarter being 40% and the final being the remaining 20%. Letter grades are assigned based on the scale listed below:

A = 90% - 100%	Quarter 1	= 40%	Assessments	= 35%
B = 80% - 89%	Quarter 2	= 40%	Classworks & HW	= 30%
C = 70% - 79%	Final Exam	= 20%	Labs/Simulations	= 20%
D = 60% - 69%			Participation	= 15%
F = 50% - 59%	Total	= 100	Total	= 100%

Checking your Grades:

It is **expected** that students and parents regularly access PowerSchool to check grades. Also, students are expected to access their grades at least once a week and report on their progress grade through a grade check.

Classroom Expectations:

- **A. Classroom Routine**
- 1. Enter the Class Room Quietly. Go to your seat and begin to work on the warm up (Warm ups are handed in weekly).
- 2. During Roll Please Say "Here".
- 3. The instructor will take this time to check on homework completion.
- 4. Announcements.
- 5. Lecture Time -- please do not talk and take notes.
- 6. Have all materials needed READY for the day!

Policies Classroom Policies:

1. **Dress Code:** Please refer to the dress code in the handbook. No hats or Hoodies in Class.
2. **Environment:** No distracting noises, gestures, or talking. Only those things appropriate for school are acceptable, No Phones at anytime in class, no chewing gum in class, and do not through anything in the classroom.
3. **Language:** Please follow school rules for appropriate language use, no inappropriate language will be tolerated. .
4. **Active Participation** in class is expected from each student is expected.
5. **Raise Your Hand:** If you have questions, or need something please raise your hand and ask the teacher.
6. **Technology in the Classroom:** Only those sites, WebPages, or programs that are part of the class work are acceptable.
7. **Laptop Policies:** The teacher may mute or stop the video, lock out a site, or close a tab of any student who is not meeting expectations, this way the student may remain in the class.
8. **During Classes,** everyone is expected to respect the speaker may it be your teacher or fellow students. Avoid distracting the class any means possible to avoid sanctions.
9. **Lab Procedures:** From time to time there will be Lab assignments. It is imperative for the safety of all that ALL SAFETY regulations are obeyed to during lab times, no horseplay or other un sanctioned activities will be tolerated.
10. **Tools and Equipment:** All tools and equipment are to utilized only with the proper safety precautions: If you break it the total price of the tool or equipment will be charged to you.

Absences and Make-up Work:

- It is the student's responsibility to obtain any missed work and notes in cases of excused absences.
- If a long-term assignment has been assigned before the absence, the due date stands.
- Make-up work must be received within the number of days (s) of the excused absence and according to the time of the assignment or it will be treated as late work.
- Students will not receive any credit for work from an unexcused absence. It is important to be present every day in class.

Late Work:

Due dates are posted several times and you are responsible for knowing these. If an assignment is not handed in when asked for or due, it is considered late.

- If late: You will not be reminded to turn in late work.
- Late work will be accepted at teacher discretion.
- Any late work accepted by the teacher will have a 5% deduction per day from the final grade.

Science Lab Notebook:

Each student will be required to keep all work for this class in a composition notebook. The science lab book (composition notebook) will be used weekly. The folder will be used for handouts. Periodically, the lab book will be checked for organization and completeness using a rubric. It is the student's responsibility to keep their lab books current. An up-to-date example of the lab book can be accessed before or after school.

*****May 15-19 Review and Pretest*****

*****May 23-27 Map Testing Review and Structure*****

*****May 31- June 2 Final Exam*****



WE HAVE READ AND UNDERSTOOD THE CONTENTS OF THE **BIOLOGY COURSE OUTLINE**

Student Signature: _____

Parents Signature: _____

Date: _____

August 9-10

Class Introduction and Orientation

1. Teacher Introduction
2. Classroom and Learning Rules
3. Grading System
4. White Board and Cabinets Orientation
5. Chrome Books Sites we will use.
6. Classroom Contracts

August 11-12

Biology Pre-Test (Scientific Reasoning Assessment)

Laboratory Orientation

1. Safety Scenario
2. Article in Lab Safety
3. Becoming Familiar with Lab Equipment
4. Laboratory Safety and Contract
5. **First Assignment -- All About Me**

Unit-1

August 16-19

Biology Process Skills and Characteristics of Living Organisms Themes in the Study of Life

1. What is Living?
2. Living or Non-Living
3. **Lab: Observing the Characteristics of Life**

August 23-26

Structure and Function of Cells

1. Prokaryotic and Eukaryotic Cells
2. Cellular Structure and Function
3. **Atoms, Molecules, and Chemical Bonds**

Unit -2

August 30-Sept 2

Structure and Function of Cells

3. A Tour of the Cell
4. Membrane Structure and Function
5. Function of Organelles
- 5: **Lab: Cell Structure**

Sept 5-9

Cell Transport

1. Cellular Transport, 4.1 Passive Transport, 4.2 Active Transport
2. General Structure of the Cell Membrane
3. Diffusion

Sept 13-16

Cell Transport

4. Osmosis
5. Active Transport
6. Water and the Fitness of the Environment
7. **Lab Understanding Osmosis (Water Purification)**

******Quarter Quiz******

Sept 20-23 --Grades Go In

1. Carbon and Molecular Diversity
2. Structure and Function of Macromolecules
3. Introduction to Metabolism

Break Sept 26-30

Oct 4-7

The Cell Cycle

1. Respiration: How Cells harvest Chemical Energy
2. Reproduction of Cells
3. Meiosis Life Cycles

Unit-3

Oct 11-14

Mitosis and Meiosis

1. Mitosis
2. **Lab Mitosis**

Oct 18-21

Mitosis and Meiosis

2. Meiosis
2. **Lab Meiosis**

Oct 24-28

Mitosis and Meiosis

3. Mutations
4. Sexual/ Asexual Reproduction

Nov 1-4

Photosynthesis

1. Sun and Energy
2. Chloroplasts (Structures)
3. Light Reactions and Calvin Cycle
4. **Lab: Light to Energy**

Nov 8-10 No School 11th

2. Significance of mitosis in cell replacement and tissue repair by stem cells.
3. The state that uncontrolled cell division can result in the formation of a tumor.
4. **Lab: Cell Division**

Nov 15-18

Cellular Respiration

1. Mitochondria
2. Glycolysis
3. **Lab: Mitochondria**
3. Fermentation and Lactic Acid
4. Krebs' Cycle
5. ATP and Cellular Energy, E.T.C
6. **Lab: Explain Cell Respiration in the Human Body**

*****Thanks Giving Break Nove 20-24*****

Nov 28-Dec 2

1. Prokaryotes and the Origins of Metabolic Diversity
2. Protists and the origin of Eukaryotes
3. Fungus

Dec 6-9

31. Anatomy of a Plant
32. Transport in Plants

Dec 13-16 --Grades Go In

****1. Pre Test Midterm****

****2. Midterm****

Winter Break Dec 19- Jan 6*

SECOND SEMESTER

Jan 10-13

33. Plant Nutrition
34. Plant Reproduction
35. Control Systems in Plants

Jan 17-20

DNA/ RNA and Protein Synthesis

1. DNA/ RNA Structure
2. Replication
3. Lab Make a DNA

Jan 24-27

DNA/ RNA and Protein Synthesis

6. From Gene to Protein
7. The Genetics of Viruses
3. Transcription

Jan 31 - Feb 3

4. Translation
5. Protein Synthesis

Feb 7-10

Genetics and Heredity

1. Mendelian/ Non-Mendelian Heredity
2. Punnett Genetics

****Quarter Quiz****

Feb 14-17 ---Grades Go In

3. Mendel and the Gene Idea
4. The Chromosomal Basis of Inheritance
5. The Molecular Basis of Inheritance

No School Feb 20-24

Genetics and Heredity

3. Pedigrees
4. Genetic Disorders
5. Lab: Heredity

Feb 28-Mar 3

Evidence of Common Ancestry and Diversity

3. Similarities of cellular processes and structures
4. Comparisons of DNA sequences between species

Mar 7-10

Biological Molecules and Enzyme Action

1. Macromolecules
- 1.1 Carbohydrates

Mar 14-17

Biological Molecules and Enzyme Action

- 1.2 Proteins
- 1.3 Lipids

Mar 21-24

Biological Molecules and Enzyme Action

- 1.4 Nucleic Acid
2. Enzymes

Mar 28-31

Biogeochemical Cycles

1. Water and Oxygen Cycles
2. Carbon Cycle
- 2.5. Lab -- Water Cycle

April 4-6 no school on 7th

Biogeochemical Cycles

3. Nitrogen Cycle
4. Phosphorous and Sulfur Cycles
5. Lab: Rocks

April 18-21

Ecosystem Dynamics, Functioning, and Resilience

1. Habitat and Niche
2. Limiting Factors
3. Carrying Capacity

NO School April 11 -14 Easter

April 25-28

Ecosystem Dynamics, Functioning, and Resilience

4. Ecological Relationship
5. Ecological Succession

May 2-5

Biodiversity and Humans

1. Biodiversity
2. Human Impacts on the Environment
 - A. Habitat destruction
 - B. Pollution

3.Lab: Create Slide Show Choose a Species

May 9-12

Biodiversity and Humans

- C. Introduction of invasive species
- D. Overexploitation
- E. Climate change

Lab: Oil from Waste

May 16-19

Evolution

- 1. Darwin's Theory of Evolution
 - A. Natural Selection
- 2. Adaptation

Creationism vrs Evolution

- 1. Big Bang
- 2. Universal Outer Rim
- 3. Bio Diversity
- 4. The Big Picture (evidence that mankind is still young)
& Macro vrs Micro

5. Lab: Using the Scientific Reasoning, write an argument for what you believe using creditable scientific support.

May 23-26

Unit Eight: Ecology

Introduction to Ecology.

- 1. Diverse Environments of the Biosphere: An
- 2.. Population Ecology
- 3. Communities
- 4. Ecosystems
- 5. Behavior.

May 30 - June 2

*******Final Pre Test*******

*******Final*******