Life Science Syllabus

Course Overview

Life science is the study of living things—from the tiniest bacteria to the largest animals, including humans. Understanding life science helps us answer important questions like: What makes something alive? How do living things grow and change? How do they interact with each other and their environment? By learning about life science, you will gain a deeper appreciation of the natural world, develop critical thinking skills, and see how science applies to everyday life. In this first semester of life science, you will learn the characteristics of life, levels of biological organization, how to apply the scientific process, basic structures and functions of cells, domains of life, human body systems, and animal behaviors that increase chances of survival and successful reproduction.

Life science is the study of living things—from the tiniest bacteria to the largest animals, including humans. Understanding life science helps us answer important questions like: What makes something alive? How do living things grow and change? How do they interact with each other and their environment? By learning about life science, you will gain a deeper appreciation of the natural world, develop critical thinking skills, and see how science applies to everyday life.

In this second semester of life science, you will learn about plant structures and functions, life cycles, and strategies for survival, photosynthesis and cellular respiration, evolution and natural selection, ecosystem interactions, the cycling of matter and flow of energy through ecosystems, the importance of biodiversity, ecosystem disruptions, and the impact of humans on ecosystems. You will also engage in a scientific investigation of your choice.

Course Prerequisites

None

Course Length

2 semesters

Course Learning Outcomes

Big Ideas

- The scientific method provides an objective, standardized approach to conducting experiments and, in doing so, improves their results.
- All living things have common characteristics which define life.
- Cells are the basic building blocks of all life.
- Organisms pass traits from one generation to the next. Sexual reproduction leads to increased genetic variation, which benefits species.
- All life on Earth can be classified into six distinct domains, each with unique characteristics.
- Animals, including humans, are made up of distinct organ systems, which work together to support survival of the organism.
- All animals engage in behaviors which contribute to survival and increase the chances of successful reproduction.
- Living systems are organized from the smallest units to complex organisms and ecosystems. At every level, parts work together and depend on one another.
- Energy enters life primarily as sunlight and is transformed and transferred through living systems. Matter is continuously rearranged and recycled.
- Structure and function are closely related. The structures of organisms determine how they function and survive.
- Survival depends on adaptation and reproduction. Populations change over time because individuals vary.
- Ecosystems are dynamic and constantly changing, yet they can remain stable over time.
- Humans are part of and impact living systems. Humans depend on ecosystem services and impact natural systems in positive and negative ways.
- Evidence and models help us understand life on Earth. Science is a process of using evidence to understand patterns and make informed decisions.

Scientific Inquiry

This course is designed to help students use scientific inquiry to come to understand the natural world, and to learn about scientific concepts. Labs and activities are presented in a way to allow students to develop knowledge and understandings through interacting with their environment, asking questions, and seeking ways to answer those questions.

Scientific inquiry is a powerful way of understanding science content. Students learn how to ask questions and use evidence to answer them. In the process of learning the strategies of scientific inquiry, students learn to conduct an investigation and collect evidence from a variety of sources, develop an explanation from the data, and communicate and defend their conclusions.

Scientific Inquiry-based learning allows students to design and perform experiments. Students should maintain an open and questioning mind to pose their own questions about objects, events, processes, and results.

Assignment Descriptions

- **Science Packets** - Science Packets are used to help students organize their learning for each unit. They provide students with graphic organizers, guided notes, and other activities to support their understanding of the concepts presented in the lessons and labs. Packets can also serve as a study tool.
- **Labs** - Labs in this course are a combination of virtual and physical labs. You will receive a lab kit for most of the materials required in the physical labs. Labs are designed to allow students the opportunity to explore scientific concepts through experimentation and scientific inquiry. Students will pose their own questions about objects, events, processes, and results. They will plan and conduct their own experiments, and come to their own conclusions as they read, observe, compare, describe, infer, and draw conclusions. Some labs will provide students with step-by-step directions, but many will allow the students to develop their own procedures based on their questions and exploration.
- **Quizzes** - Quizzes give students an opportunity to practice skills learned in a lesson and apply concepts to real world situations in preparation for the Unit Test. Students should expect to apply knowledge of concepts and labs to questions in the quizzes.
- **Unit Tests** - At the end of each unit students will take a unit test that will consist of a variety of question types (multiple choice, short-answer, fill in the blank, etc.). These

questions will be pulled from a question bank and will be like questions seen in the quizzes. Unit tests will serve as a measurement of students' understanding of the concepts from the unit and their ability to apply and transfer these understandings.

- **Concept Checks** - Concept Checks are intended as self-assessments for students to determine where their strengths and weaknesses are in their understanding of the unit concepts. Concept Checks will also serve as a way for students to communicate their instructors about questions they may have about the unit. Every other concept checks will require the students to meet with their instructor to discuss their learning in a one-on-one live meeting, and are labeled as Concept Check Conversation. They are meant to be a time for students to reflect on their learning and discuss this reflection with their instructor. Directions on how to schedule this meeting will be provided in the concept check.

SUPPLIES

Students will engage in virtual and physical labs throughout the course. Students will need the following materials and logins to complete the labs.

LAB KIT

You will need to order your lab kit by completing the form (link below). The kit will be shipped directly to your home and should take about 4-5 days to arrive. If you have any questions please contact your instructor.

https://www.cmasas.org/lab-kit-request-form

Lab Inventory List (.pdf)

ADDITIONAL SUPPLIES

In addition to the supplies provided in the lab kit, students will also need to supply additional materials to complete the physical labs in the course. These are noted in a table at the beginning of each lab.

Extra Supply List (.pdf)

Virtual Alternatives

If you are living outside the United States you will need to speak to your instructor about virtual lab alternatives, as lab kits are not shipped internationally. Virtual labs are completed through Explore Learning (Gizmos). You will need to request login information from your instructor, as well as a list of suitable alternatives to the physical labs.

Grading Policy

High scores will be taken for each assignment and quiz. Students are expected to complete each assignment at Mastery level (80%) or higher.

Grades will be calculated as follows:

Scores in each category will be added together and divided by total possible points for that category and then multiplied by the weight of the category.

Category Weights

- Labs = 40%
- Unit Tests = 20%
- Quizzes = 20%
- Science Packets = 10%
- Concept Checks = 10%

Grade Scale:

Percentage	Letter Grade	GPA
95 - 100	A	4.0
90 - 94.9	A-	3.7
87 - 89.9	B+	3.3
83 - 86.9	B	3.0

80 - 82.9	B-	2.7

Technical Requirements

Prerequisite Skills

Before you begin, you should be able to:

- Complete basic operations with a word processing software.
- Complete basic operations with presentation software.
- Perform online research using various search engines.
- Communicate through email.

Contact Technical Support

1. Check the **technical support webpage** to see if your issue is listed.
2. If your technical issue is not addressed on the technical support page then fill out a **support ticket**.

CMASAS Honor Code

CMASAS is a virtual community where we want all who join our school to feel valued. As a member of our community you have a responsibility to help build this type of environment by following our school's honor code. The honor code is outlined in the Parent-Student Handbook but we have provided a brief overview below.

- **Global citizenship**: Students are responsible for good behavior in our virtual hallways, just as they are in a classroom or a school hallway. Always use a computer in a way that shows consideration and respect. You are not to use obscene, profane, threatening, or disrespectful language. CMASAS expects students to adhere to the local and country laws applicable to them.
- **Act with academic integrity:** Integrity and authenticity of student work is something that we take very seriously at CMASAS. Do not cut, copy, or plagiarize internet content or the work of your online classmates.
- **Be mindful of copyrights:** Just as copying someone's writing is considered plagiarizing, so is the act of using someone else's photo, comic, joke, or quote without giving proper credit to its creator or author.
- **Be kind:** Communicate in a respectful and kind way, keeping comments and subject matter in posts appropriate.
- **Don't troll:** Avoid hijacking conversation threads for personal gain or steering conversation toward off-topic subjects or personal attacks toward another user.

- **Be sensitive to privacy:** Always limit your audience to a need-to-know basis.
- **Limit the spread of spam:** Spam is the equivalent of junk mail that clogs email inboxes and offers little professional or personal value while potentially opening up the users to hacking.
- **Use proper spelling and grammar**: Communicate with others using proper spelling and grammar. Save acronyms, web jargon, and shorthand for its prospective audience if it must be used at all.
- **Exercise self-control and open mindedness**: All students should exercise self-control, think before speaking, and look for value in the opinions of others.
- **Be respectful:** CMASAS requires that all comments made and opposing viewpoints expressed be done in nonconfrontational and respectful manner.
- **Consider consequences and protect yourself:** Think about the social consequences of any publicly accessible online community forum or other program you interact with.
- **Follow school policies:** All students must follow CMASAS school policies listed at the end of the Parent-Student Handbook.

Academic Integrity

Academic integrity is founded upon and encompasses the following five values: **honesty, trust, fairness, respect, and responsibility**. Supporting and affirming these values is essential to promoting and maintaining a high level of academic integrity. Each member of the academic community must stand accountable for his or her actions. As a result, a community develops in which students learn the responsibilities of citizenship and how to contribute honorably to their professions.

The first responsibility for academic integrity lies with individual students and faculty members of this community. A violation of academic integrity is an act harmful to all other students, faculty, and the school. Deceit and misrepresentations are incompatible with the fundamental activity of this academic institution and shall not be tolerated. Members of the CMASAS community are expected to foster in their own work the spirit of academic honesty and not to tolerate its abuse by others. This Academic Integrity Policy encompasses the duration of the student's enrollment with CMASAS.

Students are expected to practice responsible and honest behavior. Acts of academic dishonesty will not be tolerated at CMASAS and typical offenses are listed but not limited to the following:

- Copying material from other sources and claiming it as your own without citation.
- Soliciting answers from other students, online forums, or search engines.
- Intentional falsification or invention of date, citation, or other authority in an academic exercise.
- Taking someone else's work or ideas as your own, with or without their consent, by incorporating it into your work without full acknowledgment.
- Theft or alteration of materials.