Online Courses for High School Students
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Marine Science 1B

Water is the flowing lifeline of the Earth, and it impacts the life of every living creature. But have you ever stopped to think about human' impact on water? In this course, you will discover more about the role we play in both threatening and protecting water sources. You will explore climate change and other events that concern Earth's water sources and expand your knowledge of marine science careers. You will also plan and execute a cumulative research project exploring an aquatic environment near you using the Scientific Method. Let's dive in and continue your exploration of the World's water!

Prerequisite: None
Course Length: One Semester
Required Materials:
Software:

- Word processing software

Optional:

- Art supplies
- Audio recording device
- Graphic design software
- Presentation software
- Spreadsheet software
- Video recording device

Course Outline:

Unit 1: Careers in Marine Science
Some students may have had their college plans mapped out for as long as they can remember, and some may still be figuring it out. Both of these paths are perfectly acceptable places to be as we walk through the process of becoming a marine science professional. We'll talk about choosing an undergraduate program, picking a major, and potentially pursuing graduate study. As we go, remember to follow your passions and interests—you never know where they will lead you!

Unit 2: Human Uses of Water
All life on Earth relies on water, making it an essential natural resource. However, despite the massive need for fresh water, only one percent of Earth's available water can be used for drinking. This leaves many people struggling to meet their basic water needs even though access to clean drinking water is a human right, as outlined by the United Nations. Beyond this, can you believe that the creation of almost all the objects we own require water at one stage or another of their manufacturing process? And just think about how everything requires water in order to be cleaned! We use water so often without thinking about it that, in some parts of the world, it's easy to forget how precious a resource it is. Let's remind ourselves of the value of this precious resource!

Unit 3: The Impact of Humanity on Ocean Life
Humanity has grown exponentially—and not only in population. It has also grown in intelligence over the past few centuries. We have managed to make planes fly, land on the Moon, run cars off of batteries, and develop algorithms that show us internet content that suits our interests. It would be absurd to argue that humans have not made leaps and bounds in regard to our intellect. However, what did these advancements cost the environment (and, in particular, the marine ecosystems) that surround us? There are no simple answers here, but let's start by exploring how human activities have impacted our world and what we can do to protect the ecosystems and organisms around us!

Unit 4: Current Events in Marine Science
Imagine that you type the phrase "marine science news" into an internet search engine. About 647,000,000 results appear in 0.92 seconds. This is a massive amount of information readily available at your fingertips! As you browse the results, you start to see similar stories on various sites—some with conflicting information and some with just slight inconsistencies in data values. How can you discern what is reality and what may be misinformation? Unfortunately, you can't get that answer in 0.92 seconds, but hopefully by the end of this unit, you will understand how to analyze existing information and current events using your critical thinking skills.

Unit 5: Exploring the Ocean
Modern-day technological tools and instruments allow marine researchers to explore and discover more about the ocean than ever before. From remotely operated submersible vehicles to nautical chart apps, the technology of today will forever change the science of tomorrow. What's even more fascinating is that technology will continue to advance. The revolutionary scientific technology of today may be as common as a thermometer in as little as a decade—and you may very well be the Sylvia Earle or Jacques Cousteau of the future! That's why it's so important to learn about the history of ocean exploration and the many tools that have helped get us to where we are today.

Unit 6: In the Lab
Aristotle once said, “For the things we have to learn before we can do them, we learn by doing them.” This quotation summarizes the importance of laboratory work in marine science. Lab work gives students the opportunity to implement concepts learned through study in an experiential learning environment, which promotes a greater understanding of important topics. Many scientific concepts cannot be fully grasped by reading or watching videos. In order to build a true understanding, we need to gain practical experience collecting data or samples and testing them in a lab or in the field. Let’s find out how!

Unit 7: Visualizing Your Data
If you type the phrase “how to represent data” into your favorite search engine, chances are good that you will receive over a billion results in under a second. Most of these results will provide overlapping information, and some may even present conflicting information, but most will reiterate that the best way to represent data is by using a model. Here, we are talking about scientific models: physical replicas, digital simulations, mathematical equations, and graphs. But how do you create a model, and how do you choose which type of model is best for your own study? Well, let’s find out!

Unit 8: Visualizing Your Data
If you type the phrase “how to represent data” into your favorite search engine, chances are good that you will receive over a billion results in under a second. Most of these results will provide overlapping information, and some may even present conflicting information, but most will reiterate that the best way to represent data is by using a model. Here, we are talking about scientific models: physical replicas, digital simulations, mathematical equations, and graphs. But how do you create a model, and how do you choose which type of model is best for your own study? Well, let’s find out!

Final Exam