Marine Biology Full Year Online Self-paced Curriculum

Course Description: Full-Year Marine Biology (Ages 10-18)

NatureGlo's Marine Biology is a comprehensive, self-paced life science program that invites students to dive deep into the wonders of the ocean—from the sunlit coral reefs to the mysterious midnight zone. Designed specifically for visual, creative, and neurodivergent learners, this course moves beyond dry textbooks to explore the "What" and "How" of marine life through a neutral, nature-based worldview.

Students will progress through four core volumes and four specialized bonus mini-courses, covering:

Zoology & Anatomy: Detailed studies of everything from microscopic diatoms to the intelligence of Cetaceans (whales and dolphins). Integrated STEAM Projects: Select lessons feature MathArt™ modules, applying geometric symmetry and mathematical ratios to biological illustrations of mollusks and cephalopods.

Real-World Application: High school-level math skills are applied to track Leatherback Turtle migrations and analyze marine reptile physiology.
Rich Media Learning: Each lesson includes Gloria Brooks' signature video instruction, interactive PowerPoints, curated "Virtual Libraries," and digital games (Quizlets) to reinforce core concepts.

Whether used for middle school enrichment or a 1.0 High School Biology/Elective Credit, this course provides over 170+ hours of instructional content, leaving students with a professional-grade portfolio and a lifelong passion for ocean conservation.

What's Included:

- Main lesson pre-recorded videos taught by Gloria A. Brooks (mini lessons from 3 - 20 minutes in length each)
- PowerPoint and student study guide downloads per lesson
- Other pdf downloads (not necessarily per lesson) featuring easy hands-on projects students can complete.
- **Curated Internet Activities** (I host on my free Weebly for education account) called "Virtual Libraries". Each course type has its own Weebly website where since 2011 I've researched and added the best of the web's free resources including: informative videos, video tutorials, web links, pdf downloads, both informative and as project tutorials. In my courses, I title links to the Internet activities as "Going Beyond.
- **Quizlets** - digital games for kids to play reinforcing content taught in my video lessons.
- **Instructor Office Hours for Student and Parent Support -** Asynchronous support is provided via email. Students are encouraged to contact the instructor (gloriabrooks@natureglosescience.com) with questions, course discussion, or to optionally submit one student course project per semester for personalized feedback from Gloria Brooks. Student project feedback response takes up to 1 week. Emails sent on weekdays will typically receive a response within 24 hours. (Emails sent over the weekend or on holidays will be answered on the next business day.) Comprehensive grading services are not offered.

Marine Biology Full Year Online Self-paced Course

Marine Biology I: Oceanography, Marine Plants & Invertebrates

Lesson 1 - Oceans Intro: Research and map the world's major oceans and their unique geographic features.

Lesson 2 - Oceanography Intro: Analyze and model the Coriolis effect and the science behind oceanic zones, waves, and currents.

Lesson 3 - Marine Plants and Marine Algae I: Diatoms: Conduct a focused micro-study on diatoms and create a MathArt visualization of these jewel-like organisms.

Lesson 4 - Marine Sponges: Examine the anatomy and ecological role of marine sponges (Phylum Porifera).

Lesson 5 - Cnidarians: Explore the structures and life cycles of Cnidarians, including jellies, coral, and sea anemones.

Marine Biology II - Jellies, Mollusks & Whales

Lesson 1 - Cnidarians (Advanced): Investigate specialized classes like hydrozoa, cubozoa (box jellyfish), and staurozoa.

Lesson 2 - The Aplacophorans: Tusk shells: Observing, sketching and creating a mini projects

Lesson 3 - Comb Jellies & Marine Worms: Compare Ctenophores (comb jellies) and complete an introductory study on marine worm species.

Lesson 4 - Mollusks Chitons: Detail the shell structure and adaptive features of Chitons.

Lesson 5 - Mollusks Bivalves: MathArt Project: Diagram the anatomy and symmetrical shell features of Bivalves (clams, oysters).

Lesson 6 - Marine Mammals Cetaceans: Compare the unique adaptations of whales and dolphins within the Cetacean order.

Marine Biology III - Marine Invertebrates and Fish

Lesson 1 - Arthropods and Crustaceans Intro: Classify the major groups and defining characteristics of Arthropods and Crustaceans

Lesson 2 - Sea Spiders: Conduct an anatomical study on Pycnogonids (Sea Spiders).

Lesson 3 - Echinoderms: Systematically identify and compare the structures of starfish, urchins, sand dollars, and sea biscuits.

Lesson 4 - Introduction to Marine Fish: Survey the major classes of marine fish, focusing on bony vs. cartilaginous species.

Lesson 5 - Intro to Coral Reef Fish: Analyze the ecological relationships and physical adaptations of fish living in reef communities.

Lesson 6 - Coral Reef Fish Species: Identify and document key fish species found in the Coral Reef Biome.

Marine Biology IV - Cephalopods, Marine Turtles, Snakes, and Mammals

Lesson 1 - Cephalopods Intro: Compare the intelligence and predatory adaptations of octopus, cuttlefish, squid, and nautilus.

Lesson 2 - Cephalopods: The Cuttlefish: Investigate the advanced camouflage and communication techniques of Cuttlefish.

Lesson 3 - Cephalopods Octopus and Squid: MathArt Project: Apply geometry and ratio studies to accurately draw the tentacles and bodies of octopus and squid.

Lesson 4 - Marine Reptile MathArt: Leatherback Turtles: Apply real-world math skills by calculating weight, converting between pounds and tons, and analyzing the distance of the Leatherback's record-breaking migration routes.

Lesson 5 - Marine Reptile Sea Snakes: Analyze the venom, habitat, and specialized adaptations of sea snake species.

Lesson 6 - Marine Mammals Dolphins: Conduct a detailed study on the social structure and echolocation abilities of dolphins.

BONUS COURSE #1: Marine Reptiles

Lesson 1 - Arthropods and Crustaceans Intro: Classify the major groups and defining characteristics of Arthropods and Crustaceans

Lesson 2 - Sea Spiders: Conduct an anatomical study on Pycnogonids (Sea Spiders).

Lesson 3 - Echinoderms: Systematically identify and compare the structures of starfish, urchins, sand dollars, and sea biscuits.

Lesson 4 - Introduction to Marine Fish: Survey the major classes of marine fish,

focusing on bony vs. cartilaginous species.

Lesson 5 - Intro to Coral Reef Fish: Analyze the ecological relationships and physical adaptations of fish living in reef communities.

Lesson 6 - Coral Reef Fish Species: Identify and document key fish species found in the Coral Reef Biome.

BONUS #2 Mini Course - Marine Zoology I

Lesson 1 - Crustaceans Hermit Crabs: Study the life cycle and unique shell-seeking behavior of the Hermit Crab.

Lesson 2 - Coral Reef Fish Species Spotlight: Mandarinfish: Complete a focused behavioral study on the Mandarinfish.

Lesson 3 - Mollusks Queen Conch: Complete a species spotlight and habitat study on the Queen Conch.

BONUS #3 Mini Course - Marine Zoology II

Lesson 1: Marine Fish Species Spotlight: Seahorses: Examine the reproductive biology and camouflage techniques of seahorses.

Lesson 2 - Marine Reptiles Sea Turtles: Complete in-depth species studies on Leatherback and Loggerhead sea turtles, focusing on migration patterns.

Lesson 3 - Whales - Beluga: Dive into a focused research project on the intelligence and communication of the Beluga whale.

NatureGlo's eScience Marine Biology and MathArt™ Online Course Mega-Bundle

NatureGlo's eScience Mega-Bundle includes BOTH the Marine Biology (grades 5 - 12)) and MathArt™ (Grades 5 - 9; older and younger students often enjoy the course and join their older or younger siblings) Online Course programs. See the Mega-Bundle Bonuses Below.

MEGA-BUNDLE BONUS COURSE #1: Dramatic Deep-sea Creatures

Lesson 1 - Deep-sea Fish: Investigate the bizarre physiological adaptations of "monsters of the deep," including bioluminescence and specialized pressure-resistant anatomy.

Lesson 2 - Deep-sea Cephalopods: Explore the mysterious world of giant and colossal squid, focusing on their predatory tactics and unique survival strategies in the midnight zone.

Lesson 3 - Deep-sea Sharks: Conduct a species spotlight on ancient and elusive sharks, such as the Frilled and Goblin sharks, to understand their role in the deep-ocean food web.

Lesson 4 - Deep-sea Echinoderms: Analyze the incredible diversity of sea cucumbers and brittle stars that thrive on the abyssal plain.

Lesson 5 - Deep-sea Crustaceans and Sponges: Examine the giant isopods and of the deep, focusing on the phenomenon of "abyssal gigantism."

Lesson 6 - Deep-sea Cnidarians: Investigate the glowing, fragile world of deep-sea jellies and siphonophores—some of the longest organisms on Earth.

Lesson 7 - Deep-sea Communities: Discover the thriving ecosystems of hydrothermal vents and "whale falls," exploring how life flourishes without sunlight through chemosynthesis.

Mega-Bundle Marine Biology BONUS #2: The Majestic Deep – Introduction to Whales & Dolphins

Unlock the "Scientist's Eye" by decoding the foundational geometry of the ocean's largest inhabitants. This exclusive mini-unit explores the marine cetaceans, or, whales and dolphins transforming "facts" into a sophisticated portfolio piece that demonstrates high-level synthesis for Middle and High School transcripts.

- Geometric Observation: Identify and sketch the geometric proportions and fluid dynamics of cetacean sounds.
- Classical Connections: Explore integrated History & Literature themes connected to the whales and dolphins..
- Knowledge Mastery: Includes a pre-built Quizlet to solidify interdisciplinary concepts.
- Portfolio Ready: Perfect for Project-Based Learning (PBL) documentation for Grades 5-12.

Mega-Bundle BONUS #3 Mini Course - Exploring Tide Pool Communities

Lesson 1 - Tide Pool Communities Part I: Tide Pool Zones and Animals

Lesson 2 - Tide Pool Communities Part II: Tide Pool Zones, Drama & Plants

Lesson 3 - Complete a project of choice about the tide pool community.

Suggested Student Assignments: Student chosen activities, projects and experiences

Each week's suggested activities including investigations, experiments and or journaling instructions are found in NatureGlo's eScience course content. Upon enrollment, you'll receive the login credentials and instructions via email.

NatureGlo's Worldview Commitment:

NatureGlo provides a respectful, neutral learning environment focused on the wonder of science and mathematics. Our instruction is non-faith-based and does not address the topic of origins. While some supplemental videos may reflect

various perspectives, they are chosen for their academic value and are presented without dogma or persuasion. We invite students of all backgrounds to join us in exploring the beauty of the natural world in a space that honors diverse viewpoints and focuses on our shared curiosity.

Grading Policy

Course work completion is optional between parents and students and is monitored by parents. Whole family participation is greatly appreciated. Parents can use the activity guides, journal, blog, hard copy portfolio, projects or activities for grading.

Academic Credit & Instructional Hours

NatureGlo's Marine Biology is a rigorous, full-year life science program designed for students ages 10-18. It provides a comprehensive pathway for 1.0 High School Biology or Elective Science Credit.

Total Instructional Hours: 205–275+ hours (significantly exceeding the standard 120-hour Carnegie Unit requirement).

Curriculum Depth: Covers Oceanography, Marine Botany, Invertebrate Zoology, Ichthyology, Herpetology, Mammalogy, and Abyssal Ecology.

Honors Option: Students who complete all core lessons plus the five specialized Bonus Mini-Courses (including the Dramatic Deep-sea Creatures module) and maintain a comprehensive scientific journal can qualify for an Honors Marine Biology designation.

Breakdown of Learning Engagement:

Core & Bonus Instruction: 45+ hours of expert-led video lessons and interactive PowerPoints (pp. 2, 4).

Scientific Research & Journaling: 100+ hours of specimen documentation, "Virtual Library" exploration, and academic sketching (pp. 2, 8).

Hands-On Labs & Modeling: 60+ hours of oceanic modeling, comparative anatomy sculpting, and creative STEAM projects.

Marine Biology Master Manipulatives & Materials List

Biological Illustration & Oceanography (Marine Biology)

- 3-ring binder
- Colored pencils
- Colored markers
- Crayons

- **Specimen Documentation Journal:** A dedicated sketchbook or nature journal for anatomical drawings and labeling.
- **Micro-Observation Tools:** A basic magnifying glass or hand lens (required for examining sand textures, shell structures, and small specimens).
- **Oceanic Modeling Materials:** Common household items (glass jars, salt, food coloring) for simulating ocean density, thermohaline circulation, and salinity layers.
- **Comparative Anatomy Media:** Modeling clay or dough (used for sculpting 3D anatomical features of cephalopods or cetaceans).
- **Artistic Rendering Supplies:** Graphite pencils, fine-liners, and watercolors (required for scientific nature journaling).

Ready to dive into Marine Biology? 🌊

Whether you are using state funding or self-paying, we've made enrollment fast and seamless.

- **For ClassWallet Marketplace Users (AL & AR):** We are a fully integrated direct-pay vendor! Do not submit manual invoices. Simply log into your state ClassWallet portal, open the official Marketplace, search for NatureGlo's eScience, and check out directly using your digital wallet allocation.
- **For Pending State Families (AZ, NH, & SC):** Our marketplace onboarding is currently processing with our account representative. In the meantime, you can seamlessly secure your spot using our standard checkout.
- **For Self-Pay Families:** Standard checkout is available at the same link. Your student can start their ocean adventure immediately!

👉 (**CLICK HERE** to Explore Marine Biology for self-paying parents)

Got questions? I'm here to help.

📧 Email Gloria A. Brooks: gloriabrooks@natureglosescience.com

💬 Messenger: [https://www.facebook.com/gloria.a.brooks]