



Going Green

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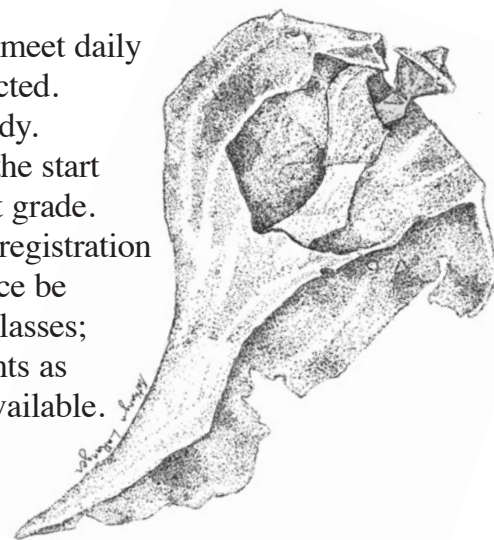
June 30 - August 7, 2014

Welcome to Science School's second century and to our first electronic brochure! We ask you to "go green" with us as CSS transitions to paperless communication. This year's registration form can be submitted via email to registration@childrensschoolofscience.org.

If you are reading a printed copy of the brochure, and would prefer an electronic version, please visit CSS's website to register your email address. This will ensure that you receive not only an electronic brochure, but also updated news of the School's programs and current events.

The Children's School of Science encourages and develops in children a love and appreciation of science. Inquiry, direct observation, and understanding of nature guide our instructional philosophy. Frequent field trips and hands-on classroom study give students the opportunity to explore nature, become adept at observation, and discover the rules that govern natural processes. The world-famous scientific community of Woods Hole offers additional opportunities to learn about research in different fields. The unusual complexity of the waters, geology, and biology of the greater Falmouth area provides a uniquely well suited "live" learning environment.

Courses are organized into three-week and six-week sessions. Classes meet daily Monday through Friday for ninety minutes. Attendance at every class is expected. Courses are organized according to students' interests and age appropriate study. Children may enroll in the youngest class if they reach the age of 7 years by the start of the Science School class in which they are enrolling and have finished first grade. We will begin placing students in classes on April 1st. It is important to have registration materials in by this date. Please select alternate courses should your first choice be unavailable. We will make every effort to place children in their first choice classes; however, this will not always be possible. Our goal is to place as many students as possible in a course. Students will be assigned additional classes if space is available. First priority is given to children who have taken courses in previous years.



2014 Calendar

- June 30** – First day of classes
- July 1** – Back to School Night – 5-6 pm
- July 4** – No classes
- July 16** – Open Board Meeting – CSS 7 pm
- July 18** – End of session A – Open House
- July 21** – Session B begins
- July 22** – Back to School Night 5-6 pm
- July 24** – CSS Picnic – Ballpark 5 pm
- August 4** – Annual Meeting – Fisher House 7:30 pm
- August 6** – Open House – 5-6:30 pm
- August 7** – End of sessions B and AB

The Children's School of Science is made possible through the cooperation and collective generosity of dedicated parents, teachers and benefactors. CSS gratefully acknowledges all contributions from its many friends, and families. CSS also gives thanks to Anonymous Donors, Bristol-Myers Squibb Matching Gifts Program, Cape Cod 5 Cent Savings Bank, Church of the Messiah of Woods Hole, Clowes Fund, Esther Simon Charitable Trust, Ethel Metz Fund, The Friendship Fund, Marine Biological Laboratory, Memorial Funds in Honor of Past Presidents and Friends of CSS, NOAA Fisheries Service, Woods Hole Historical Museum, Woods Hole Oceanographic Institution, Woods Hole Public Library, Woods Hole Woman's Club.

Visit childrensschoolofscience.org to learn more about the school.

2014 COURSES:

Numbers listed in parentheses indicate ages for each class; letters indicate the session(s).

SEASHORE LIFE (7-8) A, B, AB Students will explore and study the flora and fauna of the seashore, including dunes, marshes, beaches and shallow water. Activities may include setting up aquaria, experiments, art projects and collections. The six week version of the course will allow for a more in-depth study of seashore life communities.

WOODS, PONDS, AND FIELDS (8-9) A, B Students will observe the local habitats of terrestrial plants and animals through outdoor activities and classroom tanks. They may make collections of plants, insects and other natural objects. Separate units will introduce students to botany, entomology, herpetology, geology and limnology.

COMPARATIVE HABITATS (8-9) AB This six-week course will explore the salt and fresh water habitats of Woods Hole by looking closely at fish, birds, insects and crustaceans. Students will learn to identify common species and discuss how they thrive in varied environments including estuaries, salt marshes, ponds and lakes. Students will study the properties of water and the impact of humans on coastal ecosystems through a project investigating water pollution in Woods Hole.

ANIMAL BEHAVIOR (8-9) A, B Have you ever wondered why certain animals live where they do, or behave in particular ways? Through collection, observation and experimentation, this course will study the habits and habitats of local animals.

ECOLOGY OF THE BIKE PATH (9-10) B Bicyclists will study the ecology and geology of the unique aquatic and upland ecosystems along the Shining Sea Bike Path. There will be daily rides with weekly driving field trips to visit more distant destinations. Participants must provide their own bicycles and helmets.

MARINE BIOLOGY (9-10) A, B, AB This is a diverse field-oriented course in which students will visit rocky, sandy and marshy ecosystems to study and collect the major groups of animals and plants of the ocean. In the classroom, students will observe marine organisms with dissecting microscopes and will make a shell collection. The six-week version will study these areas in greater depth.

COASTAL BOTANY (10-II) A Students will study the fauna and flora of Woods Hole's coastal regions. They will investigate botanical concepts through demonstrations, experiments and projects and collect specimens for their own herbarium.

GEOLOGY OF CAPE COD (10-II) B Students will be introduced to the geological history of Cape Cod. The course will focus on such topics as Cape Cod's rock record and history, fossils, soil and water. Laboratory modeling and fieldwork will help students examine the changes in the environment over past geological periods.

OCEANOGRAPHY (10-II) AB Students will examine the physical and chemical features that comprise our oceans. They will learn about ocean zonation, beach profiles, wave formation, astronomical influences on tides and currents, seafloor mapping and considerations of light, temperature and food. Students will be introduced to marine robotics, as well as engineering and its oceanographic applications.

EMBRYOLOGY (11-12) A How long does it take for an organism to develop? During development, a single cell will divide and produce many different cell types with different shapes and jobs. This course will introduce and explore the changes and stages of embryonic development in organisms through collection and microscopic research.

TERRESTRIAL ECOLOGY (11-12) B Investigate the fundamental elements of the terrestrial ecosystem: soils, plants and animals. Learn about watersheds, nutrient cycling, plant-animal interactions and succession through models, experiments and field trips. We will explore and discuss how dependent we are on these systems.

ICHTHYOLOGY (11-12) AB In this class, students will learn to fish using different baits and lures, as well as by setting traps and using seines. They will study the characteristics of species found in local North Atlantic and freshwater habitats, including their diverse forms and survival strategies.

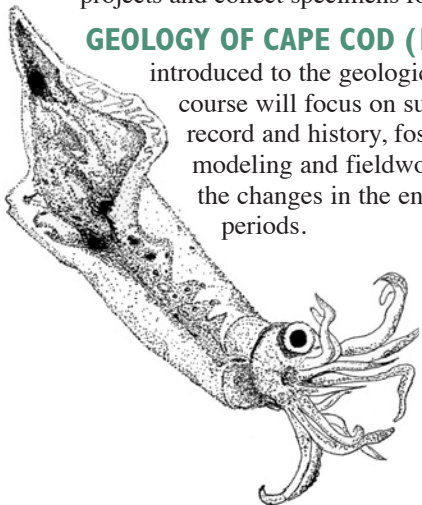
HERPETOLOGY (11-12) A Study the reptiles and amphibians of the Woods Hole environs. Learn how "herps" are different from other animals, where they live and how to identify them. Study their unique lifecycles through field trips and in class aquaria.

ADVANCED ECOLOGY OF THE BIKE PATH (12-13) B We will extend our exploration of the Shining Sea Bike Path ecology with longer rides and closer examination of path-side plants and animals. Samples collected during bike rides will be examined using dissecting microscopes. We will develop the skills needed to peel apart tiny flowers and spores and scrutinize insects and other organisms in search of taxonomic characteristics necessary for identification. Riding days will make up about half of the class periods with the other half spent discovering the amazing world under the microscope. Students must have a working bicycle and helmet and be comfortable riding for several miles.

ENTOMOLOGY (12-13) B Why are insects so successful? Investigate the curious world of insects through the collection and classification of living specimens. Study their morphology, habitats and role in human history.

INVERTEBRATES (12-13) A Invertebrates- animals without backbones- make up 97% of all animal species. This hands-on class will survey the diversity of invertebrate phyla from the simplest to the most complex. Students will study internal and external anatomy, reproduction and feeding through observation of live specimens, dissection and field trips to local ecosystems.

NAUTICAL SCIENCE (12-13) A Explore boat design and build a seaworthy model boat, learn to navigate by chart and compass, experiment with the principles of buoyancy and displacement, and delve into nautical terminology and practical seamanship. Classes will take trips to the working waterfront and through Woods Hole Passage.



2014 COURSES:

ETHOLOGY (I3-I4) B What do fiddler crabs, blue jays, chipmunks, and striped bass have in common? All have observable behaviors that can teach us about their strategies for survival. In this animal behavior class, we'll study animals in their natural environments (ethology) and also do experiments in the classroom with organisms we collect in the field. We'll discover differences between instinct and learned behavior and answer questions like: Why do hermit crabs fight so much? How does a herring gull know that it can open a quahog by dropping it on the road? Why do some spiders bounce in their webs when disturbed? Why do we love cute baby animals so much?

ROBOTICS/ROV (I3-I5) B Students will focus on the technical, economic, environmental and social aspects of real world marine engineering and electronics. Frequent field trips and data analysis will be used to study propulsion and energy. Through project design, data analysis and field exploration, students will explore the physical principles behind modern marine technology. Materials Fee: \$40.

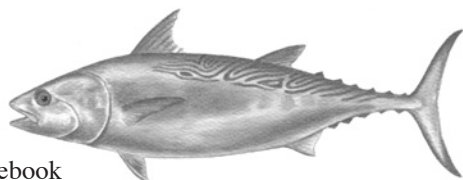
MARINE MAMMALS (I3-I6) A Whales, dolphins and seals have long fascinated people. In this course, students will study behavior, communication, social structure, adaptations, interactions with humans and the natural history of marine mammals. The course will include a whale-watching trip.

PHOTOGRAPHY (I3-I6) AB In this popular, intensive six-week class, students will review the basic principles of photography including the balance of light and time, composition, and darkroom procedures for developing and printing film. The six weeks allow the students to focus on printing techniques and photographic essays. Students provide their own SLR film cameras; space is limited to 10 students. Materials Fee: \$60.

MICROBIAL LIFE (I3-I6) B Find out more about the strange and exciting world of microbes. Observe and learn how bacteria, protists and fungi survive and thrive. Via field trips and microscopic observation in the classroom, we will discover how microbes change and shape our environment.

EXPERIMENTS IN WOODS HOLE (I3-I6) A For more than a century, Woods Hole has been an international center for research, education and training in biology. Distinguished scientists from around the world come to study the diverse and abundant marine organisms in local waters. This course is designed for young scientists curious about research taking place in Woods Hole and interested in the opportunity to do a short research project of their own.

ADVANCED MARINE BIOLOGY (I4-I6) AB Through hands-on exposure students will delve into the biology and ecology of marine vertebrates and invertebrates, their evolution and classification, anatomy and physiology, ecology, behavior and habitat. This course will include snorkeling field trips to different ecosystems around Woods Hole. Students must provide their own mask, snorkel and fins.



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Registrar: Crickett Warner
Teaching Assistants Chair: Jane Kulesza
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**CHILDREN'S SCHOOL OF SCIENCE
P.O. BOX 522**

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SCHEDULE OF CLASSES 2014

SESSION AB June 30 – August 7	SESSION A June 30 – July 18	SESSION B July 21 – August 7
<u>8:30 – 10:00</u> Seashore Life (7–8) Marine Biology (9–10) Ichthyology (11–12) Photography (13–16)	<u>8:30 – 10:00</u> Invertebrates (12–13)	<u>8:30 – 10:00</u> Entomology (12–13)
<u>10:15 – 11:45</u> Comparative Habitats (8–9) Advanced Marine Biology (14–16)	<u>10:15 – 11:45</u> Marine Biology (9–10) Coastal Botany (10–11) Nautical Science (12–13)	<u>10:15 – 11:45</u> Ecology of the Bike Path (9–10) Geology of Cape Cod (10–11) Ethology (13–14)
<u>12:00 – 1:30</u> Oceanography (10–11)	<u>12:00 – 1:30</u> Seashore Life (7–8) Woods, Ponds and Fields (8–9) Embryology (11–12) Experiments in Woods Hole (13–16)	<u>12:00 – 1:30</u> Seashore Life (7–8) Woods, Ponds and Fields (8–9) Advanced Ecology of the Bike Path (12–13) Robotics/ROV (13–15)
	<u>1:45 – 3:15</u> Seashore Life (7–8) Animal Behavior (8–9) Marine Biology (9–10) Herpetology (11–12) Marine Mammals (13–16)	<u>1:45 – 3:15</u> Seashore Life (7–8) Animal Behavior (8–9) Marine Biology (9–10) Terrestrial Ecology (11–12) Microbial Life (13–16)

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