

Celebrating 100 Years

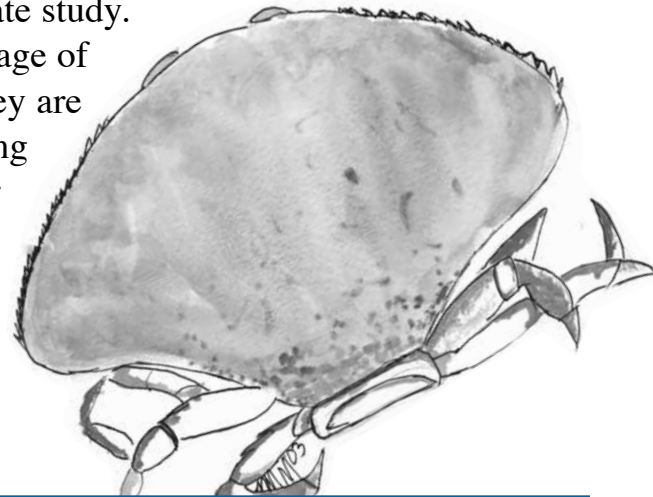
1913-2013

July 1 - August 8, 2013

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 six-week sessions and three-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 your 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 will be to place as many students as possible in a course. Additional courses will be assigned if space is available. First priority is given to children who have taken courses in previous years.



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, Church of the Messiah of Woods Hole, Clowes Fund, Esther Simon Charitable Trust, Ethel Metz 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.

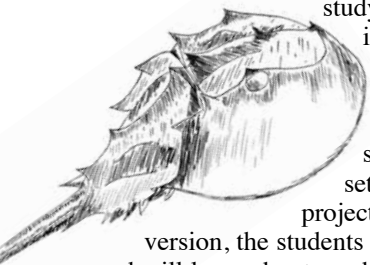
2013 Calendar

- July 1** – First day of classes
- July 2** – Back to School Night – 5-6 pm
- July 4** – No classes
- July 17** – Open Board Meeting – CSS 7 pm
- July 19** – End of session A – Open House
- July 20** – Centennial Celebration
- July 22** – Session B begins
- July 23** – Back to School Night 5-6 pm
- July 25** – CSS picnic – Ballpark 5 pm
- August 5** – Annual Meeting – Fisher House 7:30 pm
- August 7** – Open House 5-6:30 pm
- August 8** – End of sessions B and AB

2013 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 various areas of the seashore, including dunes, marshes, beaches, and shallow water. On field trips and in the classroom, students will learn about the flora and fauna of the seashore. Their activities may include setting up aquaria, experiments, art projects, and collections. In the three-week version, the students will explore the areas of the seashore and will learn about seashore life forms and their communities.



WOODS, PONDS, AND FIELDS (8) A, B Students will observe the local habitats of plants and animals both outdoors and in 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 several common species and discuss how they thrive in varied environments. In addition to Biology, students will study the scientific method, the properties of water and the impact of humans on the coastal ecosystem. Students will complete a project that looks at the impact of water pollution in Woods Hole, and explore beyond the shoreline to discover estuaries, salt marshes, ponds, and lakes.

ANIMAL BEHAVIOR (9) A, B Ever wonder 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.

MARINE BIOLOGY (9-10) A, B, AB This is a diverse field-oriented course, which takes full advantage of low tide to see, study, and collect the major groups of animals and plants of the ocean. Students will visit rocky, sandy, and marshy ecosystems for their study. In the classroom, students will use dissecting microscopes and will make a shell collection. The six-week version will study these areas in greater depth.

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

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

GEOLOGY OF CAPE COD (10-II) A 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 the past geological period.

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 observations on tides and currents, seafloor mapping, and considerations of light, temperature, and food. Students also will be introduced to marine robotics, as well as engineering and its oceanographic applications.

TERRESTRIAL ECOLOGY (11-12) A Experience the terrestrial ecosystem. Identify and investigate the fundamental elements: soils, plants and animals. Learn about watersheds, nutrient cycling, plant-animal interactions and succession through models, experiments and field trips. We will observe and explore how these components benefit us.

NAUTICAL SCIENCE (11-12) B Explore boat design and build a seaworthy model boat, learn to navigate by chart and compass, experiment with the principles of buoyancy and displacement, as well as delve into nautical terminology and practical seamanship. Classes take trips to the working waterfront and through Woods Hole Passage.

ICHTHYOLOGY (11-12) AB In this class, students learn about how to fish by using different baits and lures, as well as by setting traps and using seines. They also learn characteristics about species found in North Atlantic and freshwater habitats, in addition to observing 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.

EMBRYOLOGY (12-13) B How long does it take for an organism to develop? During development, a single cell will grow into 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, students will follow the growth and changes in the embryo.

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.

ORNITHOLOGY (12-13) 4 wks: July 1-26 Which Woods Hole bird says "drink-your-tea!" and which says "konk-a-ree!"? Our focus will be on learning how to identify birds in the field by size, shape, sound, color, behavior, and field marks. Some topics covered will be: the diversity of birds, anatomy form and function, adaptive functions of feathers, flight, nests and breeding. We'll dissect nests and learn to identify which birds made them, and we'll have the opportunity to handle study skins. The fourth week will give us more time to observe and collect data on nesting birds, learn bird songs, and work on our life lists!

MIGRATIONS (12-13) 2 wks: July 29-August 8 This two week class can be taken on its own, or as a continuation of Ornithology. Migration is the seasonal movement of animals from one home location to another to find food, breed, avoid predators, or avoid an unfavorable environment. What tells animals it's time to be on the move? How do they find their way to where they're going? Many kinds of animal migrants can be seen in Woods Hole. We'll observe the behaviors of migrating birds, tag and release monarch butterflies that we rear, visit some wayward sea turtles, learn why Great White Sharks

2013 COURSES:

and whales come to Cape Cod, gather data on migrating Green Darner Dragonflies, and learn where the Striped Bass in Eel Pond spend the winter.

ADVANCED ENTOMOLOGY (I3-I4) B This class is for both students who have taken Entomology before, and for those who haven't. We'll spend our time observing insects in the field, collecting them to rear in the classroom and conducting experiments as we focus on insect systematics, taxonomy, behavior, life cycles, the roles of insects and other terrestrial arthropods in plant communities, and predator/prey relationships. Students also will maintain an observation honey beehive in the classroom and make a small accurately-labeled collection of pinned agricultural pests and found-dead insects.

ROBOTICS/ROV (I3-I5) A 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.

ANATOMICAL ILLUSTRATIONS (I3-I6) A This illustration course is designed to introduce students to a comparative study of marine organisms. The anatomy of structures will be integrated with function, biological role, and adaptation to ecosystems.

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 essay. Participants provide own cameras; space limited to 10 students. Materials Fee: \$60.

MICROBIAL LIFE (I4-I6) B Find out more about the strange and exciting world of microbes. Observe and learn how bacteria, protists and fungi survive and thrive. Discover how they change and shape our environment. Students will collect samples from the local environment using the classroom for microscopic observation and learning.

EXPERIMENTS IN WOODS HOLE (I4-I6) B 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 innovative course is designed for the discerning young scientist with an interest in and a curiosity for exploring the experiments and investigations that take place in Woods Hole.

ADVANCED MARINE BIOLOGY (I4-I6) A, AB Students will delve into the biology and ecology of marine vertebrates and invertebrates, their evolution and classification, anatomy and physiology, ecology, behavior and habitat through hands-on exposure. This course will include snorkeling field trips in and around Woods Hole to observe various ecosystems and their inhabitants. Ongoing underwater studies will help to compare near coastal environments while visits to labs, guest scientist presentations and a whale watch will bring off shore and deep water studies into perspective. A sub focus on marine mammals will be included in this class. Students must be strong swimmers to participate in this course.

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Registrar: Crickett Warner
Teaching Assistants Chair: Jane Kulesza
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CHILDREN'S SCHOOL OF SCIENCE

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SCHEDULE OF CLASSES 2013

SESSION AB July 1 – August 8	SESSION A July 1 – August 19	SESSION B July 22 – August 8
<u>8:30 – 10:00</u> <u>Session AB</u> Seashore Life (7–8) Marine Biology (9–10) Ichthyology (11–12) Photography (13–16)	<u>8:30 – 10:00</u> <u>Session A</u> Ornithology 4 wks. (12–13) July 1 – July 26	<u>8:30 – 10:00</u> <u>Session B</u> Migrations 2 wks. (12–13) July 29 – August 8
<u>10:15 – 11:45</u> <u>Session AB</u> Comparative Habitats (8–9) Advanced Marine Biology (14–16)	<u>10:15 – 11:45</u> <u>Session A</u> Ecology of the Bike Path (9–10) Geology of Cape Cod (10–11) Invertebrates (12–13) Advanced Marine Biology (14–16)	<u>10:15 – 11:45</u> <u>Session B</u> Marine Biology (9–10) Coastal Botany (10–11) Advanced Entomology (13–14)
<u>12:00 – 1:30</u> <u>Session AB</u> Oceanography (10–11)	<u>12:00 – 1:30</u> <u>Session A</u> Seashore Life (7–8) Wood, Ponds and Fields (8) Herpetology (11–12) Robotics/ROV (13–15)	<u>12:00 – 1:30</u> <u>Session B</u> Seashore Life (7–8) Wood, Ponds and Fields (8) Embryology (12–13) Experiments in Woods Hole (14–16)
	<u>1:45 – 3:15</u> <u>Session A</u> Seashore Life (7–8) Animal Behavior (9) Marine Biology (9–10) Terrestrial Ecology (11–12) Anatomical Illustration (13–16)	<u>1:45 – 3:15</u> <u>Session B</u> Seashore Life (7–8) Animal Behavior (9) Marine Biology (9–10) Nautical Science (11–12) Microbial Life (14–16)

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