

St. Johns County School District's **MARINE SCIENCE PROGRAM**

MIDDLE SCHOOL PROGRAM

(students entering the 8th grade in August)

Students are assigned to small classes of approximately 14 students by grade level. Each class rotates to another instructor every two days. To accommodate the large number of students applying to the program and still keep class sizes small, we may add classes. Students may not move groups. Each group will do similar activities but on different days with different instructors. Due to weather or class size activities may change.

FIRST ROTATION:

**SALT MARSH ECOLOGY, KAYAKING SKILLS AND SAFETY,
FRESHWATER SPRINGS ECOLOGY/GEOLOGY, SNORKELING SKILLS**
late returning trip

Students will participate in lecture and activities on detrital energy flow in a salt marsh. The instructor will discuss kayaking skills and safety procedures. Students will then go kayaking on the tidal creeks adjacent to the Intracoastal Waterway in the Marineland area. The emphasis will be on identifying salt and brackish water plants and animals and observing primary and secondary detritus feeders. Emphasis will also be on identifying edible coastal plants. Students may use cast nets, seine nets, marine worm suction, and Ponar grab samplers to collect specimens for identification. All specimens will be released on site.

After a lecture on the underground springs and aquifer system of Florida, the instructor will discuss snorkeling skills and safety procedures. Students will then travel to Blue Springs Park where they will view freshwater plants and animals in their natural habitats while snorkeling. Students will also compare dissolved oxygen content to the presence of aquatic species and collect ongoing water quality data for park biologists. Students will hike the lowland hammock area surrounding the spring and discuss the importance of Florida's aquifer system and freshwater springs. *The trip will return approximate 4:45 to GRMS, then have limited bus stops home. Your child will know the first day of the program which day they will attend this late trip.*

SECOND ROTATION:

**PHYSICAL DYNAMICS OF WAVE ENERGY, SURFING SKILLS AND SAFETY,
WINDSURFING AND SAILING SKILLS AND SAFETY**

The physical dynamics of waves and the generation of wave energy on St. Augustine's beaches will be discussed. Computer generation will show how waves are created through wind transferring energy into the ocean through wind strength, duration, and fetch. Topics will include origins of coastal wave energy, ocean bottom contours and their effects on wave energy, and using Internet sites (NOAA) for forecasting waves through the reading of marine buoys and weather patterns. After a discussion about the skills, techniques, and safety procedures needed to surf, students will travel to the lifeguard area at Anastasia State Park for a three hour surfing lesson with Surf Station instructors.

Students will discuss the science and history of sailing. They will conduct an experiment demonstrating Bernoulli's Principle showing how the difference between high and low pressure creates suction or lift that is utilized by sails. The instructor will then present and discuss a video about windsurfing and sailing skills and safety procedures. The students will travel to Anastasia State Park where they will participate in a four hour sailing and windsurfing lesson taught by Windsurfing St. Augustine instructors.

THIRD ROTATION:

STAND UP PADDLEBOARDING (SUP), PLANKTON STUDIES, BIOLOGICAL SAMPLING TECHNIQUES

Students will participate in a lecture and discussion on the ecological importance of plankton's role in the aquatic/global food chain. Students will take plankton tows in the Intracoastal Waterway and the adjacent inlet at Summer Haven. Students will return to the lab to identify and compare their plankton samples under the microscope and videotape microscope scenes of live plankton.

Students will begin the day with a lecture on the life-long benefits of nutrition and exercise. The emphasis will be on developing strength and athletic skills through recreational water activities. Following a video presentation on the skills and safe use of SUP's, the class will travel to the Matanzas Inlet area where they will practice stand up paddle boarding on the program's set of SUP's. While half the class is on the water with one instructor, the other students with a second instructor will visit Ft. Matanzas National Park and discuss the natural and historical importance of this area. They will then take the park service's boat over to the old Spanish fort on Rattlesnake Island. Students in both groups will then rotate activities

FOURTH ROTATION:

SUSTAINABLE FISHING IDENTIFICATION SKILLS CPR/BOAT SAFETY

After a discussion of our local fish habitats and best catch-and-release techniques, students will take an all-day trip aboard the Marine Science Program's 27' Carolina Skiff to Salt Run and adjacent areas of the Intracoastal Waterway. They will sample for primary and secondary detrital feeders at various points along the Intracoastal Waterway using cast nets, seine nets, recreational fishing gear, Ponar grab samplers, and suction tubes. All specimens will be released on site, but students will record results for an ongoing data base.

Students will participate in lecture and discussion about basic CPR skills. Students will learn the proper terms of our watercraft and the importance of boat safety. Students will learn plotting and GPS skills to map out their journey based on tide, winds and currents. Students will board our skiff and travel along their designed course on Intracoastal Waterway. Practicing boat safety techniques discussed in class and making "real time" on the water decisions.

ALL CLASSES:

Students may develop skills for using various marine ecology instruments and tools such as: hydrometer, secchi disk, Kemmerer water sampling bottle, water quality test kits, dissolved oxygen kits, Ponar grab sampler, marine worm suction tubes, YSI flow meter, plankton nets, pH meters, cast and seine nets, plant presses, GPS chart plotter, depth recorder, and quadrat sampling equipment.