







High School Programs

 **POWER POTENTIAL : OCEAN ENERGY**
Ocean currents, tides and waves are potential sources for renewable energy. In this program students investigate basic oceanography concepts, engineering and electricity principles. Students observe wave characteristics, explore concepts through hands-on activities and engineer a wave energy conversion device to create power.
PSc.3.1, PSc.3.2, PSc.3.3, EEn.2.8, Phy.2.1, Phy.2.2, Phy.2.3, Phy.3.2

 **WATER IN MOTION : ORBITAL WAVES**
Students explore energy transfer in orbital waves through observations made in a 10-meter wave tank. The data collected is used to solve mathematical equations to find the available energy in a wave, wave steepness, etc. They also investigate oceanographic equipment used to measure ocean waves and currents.
PSc.3.1, PSc.3.2, Phy.2.1, Phy.2.2

  **OYSTER ECOSYSTEMS**
Oysters play an important role in the Albemarle-Pamlico Estuary. Students investigate the biological relationships found among the shells of an oyster reef, identify different species of aquatic life, and measure oyster growth and size as they explore an oyster clump straight from the Croatan Sound.
Bio.2.1, Bio.2.2, Bio.3.5, EEn.2.2, EEn.2.4

  **CHANGING SHORELINES**
Barrier island shorelines are constantly changing. Through this program students investigate coastal processes impacting our coasts, and use mapping software to discover rates of shoreline change through historic data collected by scientists. Students will consider engineering options available and the future of the islands.
PSc.3.2, EEn.2.2, EEn.2.3,

 **COLLABORATIVE PROGRAM**
RENEWABLE ENERGY: THE FUTURE OF POWER

CSI and Jennette's Pier have collaborated to offer a unique alternative energy program for 5-12 grade students. This program educates students about wind, solar and ocean energy through site visits to Jennette's Pier and CSI. 6.P.1, 6.E.2.2, 7.P.2, 8.P.2, 8.E.1 PSc.3.1, 3.2, 3.3, EEn.2.8, Phy.2.1, 2.2, 2.3, 3.2



Coastal Studies Institute

A MULTI-INSTITUTIONAL RESEARCH PARTNERSHIP



2018 - 2019 School Programs

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Education Programs

Founded in 2003, the Coastal Studies Institute (CSI) is an multi-institutional coastal science research and education institute located on Roanoke Island, North Carolina. The K-12 programs offered at CSI align with NC Essential Standards and utilize the research of the Institute to provide students with a unique, engaging experience that will make scientific concepts taught in the classroom relevant to real world applications. Programs include field-based programs and laboratory investigations. There is a \$10 program fee per student. Programs are 1.5 - 3 hours and group sizes range from 5 - 120 students depending on the program.



SUSTAINABLE COASTAL COMMUNITIES - MS AND HS

Students investigate promoting economic growth on the Outer Banks while preserving fragile natural resources and valuable cultural heritage. They explore the needs of estuarine ecosystems as well as the needs of a successful Outer Banks community. Students design a community through a mapping process which includes utilizing sustainable designs, alternative energies, scales and templates. This program is successful with middle and high school students.

5.L.2, 5.E.1, 6.E.2, 8.E.1, Bio.2.1, Bio.2.2, EEn.2.2, EEn.2.4, EEn.2.7, EEn.2.8

5-8 Grade Programs

ENERGY PRINCIPLES

This program can have two tracks, one which focuses on basic oceanography principles through a series of hands-on activities and wave tank observations to understand the process of harnessing electrical power from the ocean or one that focuses on basic energy literacy principles.

5.P.2, 6.P.1.1, 6.E.1.1, 6.E.2.2, 7.P.2, 7.E.1, 8.P.2, 8.E.1

OCEAN TECHNOLOGY

This program highlights the technology used by CSI scientists to collect oceanographic and estuarine data in harsh, salty environments. Students will design and construct an observational buoy, drifter or Remote Operated Vehicle (ROV). Code writing and drone piloting are possible extensions of this program.

5.E.1, 5.L.2, 6.L.2, 7.E.1, 8.E.1

NORTH CAROLINA SHIPWRECKS

Students “uncover” the identity of a mock shipwreck on CSI campus through observations and data collection. This program focuses on the unique maritime history of NC, the science of diving and the role of shipwrecks as artificial reefs. Math, graphing, and scaled drawing will be used to create a map of what remains.

5.C.1, 5.G.1, 6.E.1, 8.H.1, 8.H.2, 8.E.1, 8.L.3

ESTUARY ECOSYSTEMS

Students investigate the unique local estuarine ecosystem through hands-on experiences. Activities could include water sampling, plankton sampling, seining, soil sampling and wetland mapping. Data collected will be combined with the data from other classes to create a record of the brackish water system.

5.L.2, 6.L.1, 6.L.2, 7.L.1, 8.E.1, 8.L.3



FieldExperience



Lab Experience

Contact David Sybert, K-12 Education Specialist at
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