



# CAPE COD MARITIME MUSEUM

PO BOX 443 | 135 SOUTH STREET | HYANNIS, MA 02601

PH. 508-775-1723 | FAX 508-775-1706 | INFO@CAPECODMARITIMEMUSEUM.ORG

WWW.CAPECODMARITIMEMUSEUM.ORG

## Physics of Sailing

### Lesson Goal:

Sailboats are found in the waters on and surrounding Cape Cod. This lesson explores the different variables affecting sailboat design, from hull and sail shapes to wind and water influences. Is there one design that works well in every situation? We'll compare and contrast different designs.

### Lesson Objectives:

The students will:

- learn how & why a boat sails, from theories of buoyancy and simple machines to the influence of wind. Bernoulli's principle will be introduced.
- in teams, build their own wooden sailboats, becoming marine engineers.

### Assessments:

The teacher will:

- engage students in physics of sailing discussion, observe which students have prior knowledge, and which students participate.
- observe students building boats, noticing which students are following directions, which are having frustrations.
- question while 'sailing' with them. Teacher will ask questions regarding lift, motion, and design of sails.
- observe which students would like to learn more of the theories, which students would like to learn more of the practice.

### Frameworks:

- *3-5-ETS1 Engineering Design* 3-5-ETS1-1; 3-5-ETS1-2
- *3-5-ETS2 Technological Systems* 3-5-ETS2-1(MA); 3-5-ETS2-2(MA)
- *4-PS3 Energy* 4-PS3-1
- *MS-PS2 Motion and Stability: Forces and Interactions* MS-PS2-2
- *MS-ETS4 Energy and Power Technologies* MS-ETS4-1(MA)

*For More Information About this Class:*

This class can be designed by the Museum staff for any grade level from k-12, and can be taught at the Museum or in the school classroom. To see how it can meet your educational needs, and for an estimate of costs per students, please contact CCMM's Education Coordinator and STEM teacher, Deirdre Detjens, at 508-775-1723 or [ddetjens@capecodmaritimemuseum.org](mailto:ddetjens@capecodmaritimemuseum.org)

*CCMM Education Mission:*

Cape Cod Maritime Museum provides students and educators of all ages, real-world, interactive, inquiry-based, learning opportunities utilizing Cape Cod centric pedagogy to inspire an enduring connection with Cape Cod maritime culture. With a comprehensive suite of educational programs, our science, technology, engineering, art and math topics drawn from our own coastal marine environment enabling students to embrace new knowledge and skills in a way that is relevant to Cape Cod and our local culture. All classes are based in an appreciation and respect for Cape Cod's maritime past, present and future.