

YR7

Science

What are unicellular organisms?
What forces act in boats?
How is sea water different to fresh water?
How can renewable energy be used in maritime?
What are clean fuels and how can they be used in maritime?
How are flares made and used in maritime?



Y7 MARITIME

Geography

How has Cowes become an important Maritime town?

Maritime field trip: Students visit their local high street to embed their map skills and conduct an environmental quality survey and land use to help them understand and draw conclusions about how Cowes has become an important Maritime town.



Science

What role does the moon have in changing tides?
How were constellations used for maritime?
How physical is maritime working?
What muscle groups are used in sailing?
How can rusting be prevented?
Can hydrogen be used in maritime?



Design and Technology

How can I apply the centre of effort and the centre of lateral resistance to design and build a sailboat?

Students learn how to combine their previous learning of forces in science with their knowledge of careers from their geography maritime land use study to produce a boat that has been tested for efficiency and rigidity. They also learn about the careers linked to each design stage of the boat and how specific subjects at school support them.

History

How did ships help people navigate to and from Great Britain in the past?
Students study The Story of The Mayflower and Viking longboats
How was Great Britain connected to the world during the middle ages?

Textiles

How can I use different forms of stitches to create a mock maritime organism?



Technology in action visit to CECAMM: Rescue at sea

Science

What is refraction and the impact at sea?
What are marine ecosystems?
What is ocean acidification?
How do scientists clean oil spills?
How does the size of a sail affect speed?

Maritime Electronics: Students visit CECAMM (Centre of Excellence for Composites, Advanced Manufacturing and Marine) and engage in a practical activity to explore the links between technology and the maritime industry. They will learn how to electronically construct a circuit that produced a morse code signal using a range of different components. They will also learn about careers linked to safety at sea.

Geography

Is coastal management in Cowes effective?

Maritime field trip: This unique visit takes all students out on a boat to see the varied coastal features on the north coast of the Isle of Wight. The students hear from local experts about how the coastal management techniques were conceived, funded and received by the local people. Students judge how effective the coastal management techniques are and their potential impact on residents. The tour is led by the Cowes Harbour Master who brings his extensive knowledge of the workings of Cowes Harbour.



Food, preparation and nutrition:

'Welcome aboard!': What skills and techniques in the kitchen can be used in a compact maritime setting?
How can we prepare a balanced and nutritious diet on board a Merchant Navy vessel?



YR8

Science

What is the process of gas exchange in fish?
How does air resistance affect sailing?
How do ships capsize?
How do ships float and sink?
How does salt affect buoyancy?
How do you separate the components of sea water?
How is marine fuel obtained from distillation?
How does depth affect light intensity and photosynthesis?

Geography

Why are rivers useful? How do rivers effect local populations, transportation, energy use and resources?



Visit from the Shipwreck Museum

A professional maritime artefact diver visits the academy to talk to students about their work and how science supports them.

History

What does the Mary Rose reveal about Tudor Society?
What can the artefacts found on the wreck of the Mary Rose tell us about life at sea in Tudor Britain?

Design and Technology

How does the technique of vacuum forming produce the desired shape of a hull?
How can you plan the manufacturer of a motor boat?
How can I apply knowledge of hull design and propulsion to manufacturer a straight-line speed vessel?
How can we develop and apply our knowledge of tools and materials to improve a naval design?
Students apply knowledge gained from year 8 Science, stability and use this to build a model motor boat that offers a stable platform and travels in a straight line.

Maritime Field Trip: This visit is a student led enquiry into how students can independently draw inferences from the artefacts found on the wreckage of the Mary Rose. Students will have a guided tour of the museum and each student will have their own thematic focus, for example multiculturalism or warfare technology. Each theme will be drawn back to wider inferences about life in Tudor England and address any misconceptions about the perceived mono-cultural nature of Tudor England. Students also learn how England became an important maritime nation and attracted people from around the world.



Art and Design

Mixed media and printmaking; Learning about micro-organisms and microplastics in the ocean.
How do I use a variety of media to record marine life forms?
How do artists, designers and scientists work together to support the ocean?
How have different cultures represented the ocean?
How do artists raise awareness about micro-plastic pollution?

Science

How do wetsuits provide insulation?
What nutrients are in a one pot meal?
What is sonar?
What fuel is best at powering a boat?
What is the carbon ocean cycle?

Food, preparation and nutrition

How can I prepare and cook food using a hob and oven in a confined space to produce a well made and nutritious food product?
How can I ensure that the food a produce meets the dietary requirements of a multicultural crew?

Geography

How does the importance of containerisation effect our economy and its role within the shipping industry?
Students learn through their county study of China and how shipping routes interconnect countries globally.



Textiles

How can I safely operate a sewing machine to produce a beach bag?
Students learn about different careers within the maritime clothing industry

Technology in action visit to CECAMM: Rescue at sea

Maritime Construction: Students visit CECAMM (Centre of Excellence for Composites, Advanced Manufacturing and Marine) and engage the three tasks involving maritime engine construction, composites and casting. Students use already cured components, and create a vacuum bag to learn how these components were created. They then have the opportunity to vacuum test their layup to see how well it held the vacuum. They will also explore careers opportunities relating to composites and construction.



Science

What are composites and how are they used?
How are polymers used in maritime?
How is magnetism used in navigation?

YR9

Science

How do toxins affect aquatic organisms?
How are genetically engineered fish used to detect pollution?
How do invasive plant species affect marine ecosystems?

Geography

How is our physical landscape changing with different forms of renewable energy. Students study the economical impact of renewable energy, the long-term importance and sustainability.

Science

How can the strength of rope be investigated?
How can stiffness of material be investigated?
How can friction be investigated?
How can stretching be investigated?

Technology in action visit to CECAMM: Rescue at sea

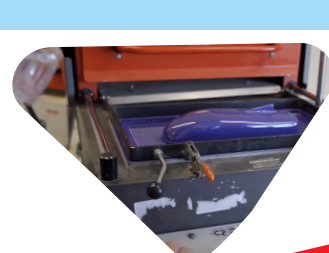
Maritime Construction: Students visit CECAMM (Centre of Excellence for Composites, Advanced Manufacturing and Marine) and engage in three activities involving advances electronics, destructive testing and virtual welding. They will be introduced to the LIVE AIS picture that shows the buoys and the activity that they are controlling. They will go on to consider the sequencing of geometric patterns required in the electronic circuit. Students will choose resistor and capacitor values and teste their end product to reflect upon the choices made.

Design and Technology

How can I apply and use my knowledge of sailboat and motor boat production to complete an independent maritime design challenge?
What shape of sea-going vessel responds better in different sea conditions?
How can I use my knowledge of industry standard manufacturing techniques and the properties of materials to build an efficient hull and rig?
Students apply knowledge gained from science lessons on the strength of ropes and sheets alongside their Year 7 and 8 knowledge of efficient hull design to meet a design brief

Geography

How are coastal communities being impacted by climate change and what is the risk to these populations?



Art

Biosphere project: Painting, 3D and screen printing.
What is the impact on coral reefs by the rising of sea temperatures?
Why does the Island have a biosphere status?
What causes coral reef bleaching?
How do artists raise awareness of threats to marine eco-systems?

Geography

How is maritime exploration in the arctic affecting the wealth international trade?
Students study the exploration of oil sources in the arctic and consider the response to changes in the North West Passage and concerns about energy security.

Textiles

Beachwear: How can I use a sewing machine to create and open seam?
Weather: How can I use seam, pattern and understanding of wind flow to produce a windsock?
Students learn about careers within the maritime industry are linked to sailcloth, safety clothing and fashion.



KS4