

**Virginia Coastal Ecosystems Field Course:  
Teachers & Scientists Exploring Coastal Change  
A Residential Field Workshop for VA Teachers  
VIMS Eastern Shore Lab  
Wachapreague VA  
July 10-15, 2016**



**Sample Daily Agenda**

Activities will take place over 5 and a half consecutive days, July 10-15, 2016, with additional pre- and post-institute activities conducted via online communications. There will be a minimum of 40 hours instructional time in classroom, lab, and field. Field activities may be adjusted to accommodate tides, weather and other scheduling factors.

**DAY 1, Sun: Arrival & Orientation Day**

Travel, Arrival & Orientation; Introduction to Concepts and Methods

*Topics covered:* Course objectives, Virginia coastal ecosystems, field sampling methods; Introduction to MWEE definition, expected course outcomes.

- Travel to VIMS Eastern Shore Lab; Arrive at Eastern Shore Lab facility, move into dormitory
- Review course objectives, Introduction to Eastern Shore coastal ecosystems and biodiversity; Introduction to oceanographic field equipment and data recording protocol, orientation to ESL Seawater Lab Facility and protocols
- Viewing and discussion of “Lifestyles of the Wet and Muddy” (Nat. Geographic film made on Eastern Shore)
- Discussion of assignment: individual/school action plan for integrating more research-based activities into classroom or field lessons.

**Day 2, Mon: Field Studies - Ocean side Field Day I, Research Topic & Classroom Resources/Activities**

*Topics covered:* coastal ecology; influence of tides on coastal habitats; biodiversity and ecology of tidal creek and mud flat, human interactions with environment and applications of science.

*Skills practiced:* oyster dredge and trawl sampling; field identifications, observing and measuring abiotic parameters; responsible handling of samples; data recording and GPS documentation; data processing.

- Field observations and activities at a tidal creek and intertidal mud flat (ocean-side lagoon) aboard VIMS vessels.
- Observations of currents, tides, water chemistry, shoreline topography, biodiversity.
- Follow-up laboratory activities, classification and measuring biodiversity of coastal marine life; analyzing data collected in field.
- Presentations by VIMS scientist (research on tracing biomarker compounds from land to coast) & research-based lesson plan.
- Daily review, classroom/field applications roundtable.

**Day 3, Tue: Field Studies - Bay Side Field Day, Research Topics & Classroom Resources/Activities**

*Topics covered:* biodiversity and ecology of saltmarsh & submerged aquatic vegetation; the Bay as nursery grounds; water chemistry human interactions with environment and applications of science.

*Skills practiced:* plankton & oyster dredge sampling; field identifications; observing and measuring abiotic parameters; responsible handling of samples; data recording and GPS documentation, data processing.

- Field observations and activities in Chesapeake Bay shallows, creek and shoreline on board VIMS vessels.
- Observation of currents, tides, water chemistry, shoreline topography, biodiversity.
- Laboratory activities, analyzing data collected in field.
- Presentations by: ODU scientist (plankton & suspended particles as mediators of climate change) & VIMS scientist (plankton as indicators of climate change); effects of albedo and research-based lesson plan.
- Daily review, classroom/field applications roundtable, work on individual/school action plan.

#### **Day 4, Wed: Field Studies – Eastern Shore Water Cycle & Changing Shorelines; Classroom Resources/Activities**

*Topics covered:* Eastern Shore water cycle, coastal habitats review & ecosystem services, coastal change impacts on biological communities, shoreline geology; human interactions with environment and applications of science.

*Skills practiced:* field identifications; recognizing zonation, documenting shoreline changes, observing and measuring abiotic parameters; responsible handling of samples; data recording and GPS documentation, data processing.

- Field observations and activities at UVA's Lab in Oyster, VA on foot and aboard UVA vessels. Presentation by UVA scientist re: Tracking water flow from land to ocean, identification of key habitats and zonation.
- Observation of water cycle components, shoreline topography, biodiversity, shoreline erosion.
- Presentations by: VIMS scientist (aquaculture and nitrogen inputs to Chesapeake Bay) & research-based lesson plan on fishery management challenges.
- Daily review, classroom/field applications roundtable, work on individual/school action plan.

#### **Day 5, Thu: Field Studies – Barrier Island Topography; Research Topics & Classroom Resources/Activities**

*Topics covered:* Ocean-lagoon dynamics; dune/beach profiling; barrier island topography, erosion and migration; human interactions with environment and applications of science.

*Skills learned:* seining; field identification; shoreline profiling; observing and measuring abiotic parameters; responsible handling of samples; data recording and GPS documentation and graphing (Excel) .

- Field observations and activities on a barrier island and ocean-side inlet; aboard VIMS vessels.
- Observations of currents, tides, water chemistry, shoreline topography, biodiversity.
- Follow-up laboratory activities, classification and measuring biodiversity of coastal marine life; analyzing data collected in field.
- Presentations by VIMS scientist (research nutrient cycling in watershed-coastal systems) & research-based lesson plan on sea level rise and coastal topography.
- Laboratory activities, analyzing data collected in field.
- Daily review, classroom/field applications roundtable, work on individual/school action plan.

#### **Day 6, Fri: Reflection, Classroom Applications and Follow-through planning**

*Topics covered:* Summary of coastal ecosystems studied, abiotic and biotic observations, causes and impacts of coastal change; applications of research-based lessons in the science curriculum.

*Skilled learned:* Methods and tools for collecting data on coastal ecosystems; data recording, management and analysis.

- Reprise workshop concepts, examples, activities, resources, and educator-scientist interactions.
- Roundtable discussion: how to apply workshop activities in classroom and field science instruction
- Individual/school action plan presentations, feedback, reflection and revisions to plans
- Discussion of follow-up communications and activities; course evaluation