

**VIMS Chesapeake Bay Academy:
Virginia Coastal Ecosystems Field Workshop for Teachers**
♦ July 8 – 12, 2012 ♦ VIMS Eastern Shore Lab, Wachapreague VA

Proposed Daily Agenda

Activities will take place over five consecutive days, July 8-12, 2012, with additional pre- and post-institute activities conducted via a project website and other methods of online communication. There will be a minimum of 40 hours instructional time in classroom, lab, field and online. Field activities may be adjusted to accommodate tides, weather and other scheduling factors.

DAY 1: Shake Down Day

Travel, Arrival & Orientation; Introduction to Concepts and Methods

Topics covered: Virginia coastal ecosystems, field sampling methods; Introduction to MWEE definition, planning and implementation.

- Travel to VIMS Eastern Shore Lab; Arrive at Eastern Shore Lab facility, move into dormitory
- Review Academy 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” (National Geographic film made on Eastern Shore)

Day 2: Field Studies - Ocean side-Barrier Island Field Day & Lab Activities

Topics covered: coastal ecology; influence of tides on coastal habitats; biodiversity and ecology of tidal creek, mud flat, lagoon and barrier island; ocean inlet dynamics; sediment and barrier island geology.

Skills learned: plankton, oyster dredge and trawl sampling; observing and measuring abiotic parameters; responsible handling of samples; data recording and GPS documentation; dune/beach profiling; data processing and graphing (Excel).

- Field observations and activities as described in Day 2, at a tidal creek, intertidal mud flat, lagoon channel, barrier island and Wachapreague Inlet
- Follow-up laboratory activities, classification and biodiversity of coastal invertebrates and fishes; analyzing data collected in field
- Presentations by scientists (topics TBA, may include research on benthos, fisheries, water quality or aquaculture)

Day 3: Field Studies - Bay Side Field Day & Lab Activities

Topics covered: coastal ecology; submerged aquatic vegetation; aquatic food webs; the Bay as nursery grounds; water chemistry; shoreline topography; coastal geology.

Skills learned: plankton net, oyster dredge sampling; seining; field identification; observing and measuring abiotic parameters; responsible handling of samples; data recording and GPS documentation.

- Field observations and activities (Scarborough Island and Pungoteague Creek near Harborton, VA) on board VIMS vessels, including plankton and trawl sampling, seining, identification of key habitats, fish and bird species and their prey
- Observation and measurement of currents, tides, water chemistry, shoreline topography, geology
- Follow-up laboratory activities, analyzing data collected in field

Day 4: Exemplary Classroom Resources; Summary of field and lab data and activities

Topics covered: exemplar environmental curricula, online and print resources; MWEE applications; human interactions with environment and applications of science.

Skills learned: graphing/Excel; PowerPoint, reflection and synthesis of MWEE objectives, planning.

- Chesapeake Bay teaching resources, inquiry lessons using on-line data and activities from the Bridge (Sea Grant–sponsored online ocean education resource center) and other environmental education resources including *Estuaries 101*, *Project WILD* and/or *Project WET*, *Healthy Waters/Healthy People* and/or *Virginia Water Resources*.
- Instruction, discussion re: planning and implementing Meaningful Watershed Educational Experiences (MWEE)

- Summary discussion of field and laboratory data and activities: *What did we learn?*
- Draft individual plans for implementing aquatic field experiences (MWEE) for students
- Tour of lab: *Topics aquaculture; benthic research; shark studies; near-shore research*

Day 5: Reflection, Classroom Applications and Follow-through planning

- Roundtable discussion of applications of workshop activities and strategies for classroom and field instruction
- MWEE plan presentations, reflection and feedback, revisions to plans
- Discussion of follow-up communication and post-course activities; course evaluation

Topics/Skills/Investigations & SOLs Covered

Day	Science Theme/SOL	Topics	Skills	Investigations
Sun	Arrival & Orientation; Introduction to Concepts and Methods SCI 6.1; LS.7; LS.10c; ES 1a,b,c; ES.3a; BIO.1a,b,d,e,f,g,h,i,l; BIO.2e; BIO.9b,d, e	Introduction to Virginia coastal ecosystems, MWEE definition and planning	Introduction to oceanographic field equipment and data recording protocol, orientation to ESL Seawater Lab Facility and protocols	Practice with field equipment; Viewing and discussion of “Lifestyles of the Wet and Muddy” (National Geographic film made on Eastern Shore).
Mon	Field and lab activities: Ocean Side Field Day SCI 6.7g; ES.4 b, ES.9e,f, ES.11a,b,c; LS.10	Coastal ecology; Influence of tides on coastal habitats; Biodiversity and ecology of tidal creek, mud flat, lagoon and barrier island; Ocean inlet dynamics; Sediment and barrier island geology.	Plankton, oyster dredge and trawl sampling; observing and measuring abiotic parameters; responsible handling of samples; data recording and GPS documentation; dune/beach profiling.	Documenting abiotic parameters and biological communities of ocean-side habitats: tidal creek; intertidal mudflat; lagoon channel; barrier island dune and beach; ocean inlet.
Tues	Field Studies – Bay Side Habitats and Biodiversity Lab SCI 6.7g; LS.5, LS.7, LS.10; ES.4 b, ES.9e,f; BIO.7a, BIO.9e	Coastal ecology; submerged aquatic vegetation beds; aquatic food webs; the Bay as nursery grounds; water chemistry; shoreline topography; coastal geology. Classification and biodiversity of invertebrates and fishes	Plankton and oyster dredge sampling; seining; field identification; measuring abiotic parameters; responsible handling of samples; data recording and GPS documentation. Recognition of: major invertebrate phyla and diagnostic fish anatomy.	Documenting abiotic parameters and biological communities of Bay-side habitats: sand bar; sea grass bed; Bay-side beach; river channel; oyster bed. Examine and recognize invertebrate phyla and basics of fish anatomy
Wed	Classroom resources relevant to Chesapeake Bay and its watershed; People, science and the Bay; Summary of field and lab data and activities. SCI 6.5f,g; SCI 6.7, SCI 6.9a; LS.12d,e; ES.1, ES.2, ES.3, ES.7, ES.9e,f, ES.11e	Exemplar environmental curricula, online and print resources; MWEE applications; Human interactions with environment and applications of science; Current research projects at ESL.	Evaluating and applying classroom and field activities to curriculum and MWEE planning; Data processing and graphing.	Compare/contrast curricula and resources for application to classroom and MWEE; Exemplar activities from Estuaries 101, Project WILD, WET, etc. Walking tour of Eastern Shore Laboratory.
Thurs	Synthesis of field data and concepts; MWEE applications of Academy resources and activities. SCI 6.1; LS.1; ES.1, ES.2, ES.3; BIO.1	Summarizing and interpreting field data; Complete MWEE pre-planning and present	Reflection: Using data to compare and contrast coastal habitats. Pre-planning MWEE experiences for students.	Teams synthesize and present habitat data in graphical form. Evaluate and provide feedback on MWEE pre-plans.