

CTY Course Syllabus Bay Ecology

When	What (posted objectives for each day)	How (assignments, lessons, activities)
<p>Daily</p> <p>-First thing in AM</p> <p>-Last thing in PM</p> <p>-anytime student has completed current assignments</p>	<p>- Review/check on recall of some of previous day's content; know what today's major learning goals and assignments will be; develop course-specific vocabulary</p> <p>- Reflect on/process day's learning; give feedback to instructor and TA</p>	<p>WOAV (Warm-Up questions; read Objectives; read Assignments; Vocabulary</p> <p>-Written reflection</p> <p>-Finish any remaining work from other days; go on to next assignment and/or do additional reading; possibly additional interest-based projects if time allows. There is always plenty to do in BACO!</p>
<p>Day 1</p>	<ul style="list-style-type: none"> • Learn lab safety and other rules that will allow us to have an excellent session here in BACO • Become familiar with the different water tests we'll be using: how to do them and why we do them • Know expectations for observations/data collection on field trips; • Use water test data and observations to assess health of today's field site • Learn definition of ecology • Get to know your classmates/colleagues and all BACO teachers • Begin learning about the geography and other characteristics of the Chesapeake Bay 	<p>(Pre-test done on Sunday/Day 0)</p> <p>-Lecture/notes on safety rules; building tour; discussion of and signing of honor code</p> <p>-Field trip to WC Boathouse; water test stations</p> <p>-Field Report and Field Observation Questions</p> <p>-Icebreaker</p> <p>-Lecture/notes: What is Ecology?</p> <p>-Lessons on daily routines (WOAV and reflection)</p> <p>-Mapping Activity</p>

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Day 2	<ul style="list-style-type: none"> • To understand how the combination of fresh and salt water works in the Bay • To become more familiar with the geography of the Bay and its watershed • To apply information from readings to a laboratory activity 	<ul style="list-style-type: none"> -Readings & check-in questions -Finish Mapping Activity -Salt Wedge Lab and report
Day 3	<ul style="list-style-type: none"> • To learn to use seine and dip nets; practice water tests • Begin learning to identify fish, SAV, and EAV by knowing their identifying characteristics • To become familiar with the external anatomy of fish and the unique features of aquatic plants 	<ul style="list-style-type: none"> -Field trip to Stillpond -Field Report and Field Questions -Lesson/notes on Fish External Anatomy -Lesson/Activity on SAV/EAV -PFG on a plant -Lesson on fish identification by and identifying characteristics
Day 4	<ul style="list-style-type: none"> • Record thorough, complete observations and species lists on your field reports, and use them to assess the site. You can even compare this site to the others we have been to! • Practice seining and identifying fish & SAV • Begin learning some reasons why wetlands are important • Observe birds (and other life) in and near a wetland 	<ul style="list-style-type: none"> -5 minute Bill Nye video on wetlands -Field trip to Eastern Neck Island National Wildlife Refuge – birdwatching, wetland observation, seining and water tests -Field Report and Field Observation Questions; Drawing of wetland observation

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Day 5	<ul style="list-style-type: none"> • To become able to identify and explain several reasons why the Chesapeake Bay is an especially productive ecosystem and why it is also a stressful habitat • To identify and create Personal Field Guide entries for SAV and fish • Learn to use a dichotomous key • To identify fish and record detailed observations of their external anatomy 	<ul style="list-style-type: none"> -Possibly watch part of “Poisoned Waters” (recent Frontline documentary on Chesapeake Bay and Puget sound) -Good, Bad, and Ugly – reading, posters, presentations -Dichotomous Key lesson -Fish ID/External Anatomy papers/PFGs -Quiz One -Skipjack reading to prepare for Monday
Day 6	<ul style="list-style-type: none"> • Learn about a unique type of boat used for collecting oysters in the Chesapeake Bay • Learn about ways that oysters and other edible creatures have been caught (historically and in present times) • Learn about oysters and the other creatures that live in/on oyster bars • Learn more about lives/jobs of people who depend on the Bay for making their living – now and in the past (especially watermen) 	<p>Field Trip to Chesapeake Bay Maritime Museum and to sail on the skipjack HM Krentz</p> <ul style="list-style-type: none"> -Field Report, map and history activities on kipjack; field questions for skipjack and museum
Day 7	<ul style="list-style-type: none"> • To learn more about four species in the Chesapeake Bay • To teach your classmates and learn from your classmates • Learn more about the internal anatomy of a very important Bay species • Review reasons the Bay is naturally stressful and observe how those stressful factors can affect one Bay species 	<ul style="list-style-type: none"> -“Expert Topics” Research and Presentations -Oyster Dissection (preceded by internet-based preview/guide) -Begin Fish Respiration Lab -Possibly watch part of “Poisoned Waters” (recent Frontline documentary on Chesapeake Bay and Puget sound)

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Day 8	<ul style="list-style-type: none"> • To learn how to assess the water quality of a stream by looking at the population of aquatic macro-invertebrates • Review reasons the Bay is naturally stressful (even without any pollution or other problems) and observe how those stressful factors can affect one Bay species 	<ul style="list-style-type: none"> -Field Trip to Unicorn Branch: Stream Survey including habitat quality checklist; Field Report -Continue work on Fish Respiration Lab
Day 9	<ul style="list-style-type: none"> • Investigate and evaluate a forested buffer zone • Practice seining and recognizing fish and plant species in the field • Identify environmentally responsible farming practices in use 	<ul style="list-style-type: none"> -Field Trip: Buffer Lab; Field Report; Field Observations -Continue class work with any time remaining when we return
Day 10	<ul style="list-style-type: none"> • Conduct an experiment to observe how changes in water temperature affect one bay species • Present results in a correctly titled and labeled line graph • To observe and carefully describe some of the plants and animals we've collected • Know the major problems of the Chesapeake Bay and sources and effects of the top 2 problems 	<ul style="list-style-type: none"> -Complete Fish Respiration Lab and report -Discussion of results -Lesson/individual assistance with line graphs and understanding of independent/dependent variables -Fish and plant ID; PFGs; External Anatomy papers about fish -Lesson on problems of the Bay -possibly watch part of "Poisoned Waters" (recent Frontline documentary on Chesapeake Bay and Puget sound)

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Day 11	<ul style="list-style-type: none"> • To compare two different stream sites by looking at the population of aquatic macro-invertebrates • <u>Complete the best field report (including site assessment) ever! (Last one in BACO!)</u> • Practice seining again and learn to cast net • Learn more about sources and effects of the major problems of the Bay 	<ul style="list-style-type: none"> -Field trip to Urieville: Stream Survey; Field Report; Cast netting and seining -Identification of fish, SAV, and other species collected -Bay Buffers
Day 12	<ul style="list-style-type: none"> • Learn more about causes and effects of excess nutrients, sediments, and toxics in the bay • Learn more about external and internal anatomy of the white perch • Practice identifying and describing several of the species we have found so far. • Possibly: teach/learn from another class about impacts of global warming 	<ul style="list-style-type: none"> -Sediment reading and Bay Buffers -Do You Know What Happens When it Rains and pages from field guide – read; select most important paragraph from each; discuss paragraph selections -Nutrient readings and Nutrient Sources and Flow Chart -Please Don't Feed the Bay -Yellow Perch dissection -Movie: It's Happening Today on the Chesapeake Bay -Possibly: protest/other activity with Model UN class
Day 13	<ul style="list-style-type: none"> • Consider solutions to the Bay's problems – government-level and individual-level • Consider social, political, and economic factors affecting how willing people may be to take action to help the Bay. • Learn more about Waste Water Treatment Plants; Find out how the spiffy brand-new Chestertown one works and what it does/doesn't remove from wastewater before releasing it into the Chester River 	<ul style="list-style-type: none"> -Quiz Two -Mock Hearing: "Heron's Rook Rest Home building permit application" -Horseshoe Crab Town/Meeting Debate; discussion of what regulations Natural Resource Managers should propose; announce regulations; watch (10 minute) video clip about one waterman's innovative solution to bait problem -Field trip to Wastewater Treatment Plant -Begin Action Project

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Day 14	<ul style="list-style-type: none"> • Catch as many different species of fish and SAV as possible by working together very cooperatively with your seining group and using your best seining technique. • Minimize the number of dead silversides, etc. you leave on the beach • Practice identifying fish and SAV in the field (from memory and using field guides and dichotomous keys) • Check on how much you have learned about identifying plants and animals and other “hands-on”-type things in BACO (Lab Practical) 	<ul style="list-style-type: none"> -Post-Test -Field Trip; Seining contest and identification (by students only) in the field -Lab Practical -Action Project
Day 15	<ul style="list-style-type: none"> • Reflect on/consolidate your learning in this course 	<ul style="list-style-type: none"> -Field trip to Boathouse -Reflection time and sharing