Bay Ecology (BACO)
CTY Course Syllabus

WEEK 1/DAY 1

Morning	**Objectives**	**Methods**
Rules/safety/daily daily routine/ expectations/ honor code	-Correctly follow safety rules. -Describe safety features of area. -Identify expectations. -Organize personal space	-Lecture -Walk-through -Organization exercise
Intro to water tests	-Correctly use water tests. -Identify safety features to tests. -Correctly describe disposal methods -Observe watershed	-Perform water tests in a small group -Observation -Interpret results
Afternoon		
WCBH field report and questions	-Observe watershed and relate water tests to land use.	-Observation questions
Watershed map	-Identify key landmarks, physical and political.	-Map activity
Watershed development	-Create a model watershed area. -Relate land use to down river effects.	-Individual development of a watershed piece
Field Guide	-Explore Bay history, productivity, Uniqueness, properties, etc. pp.3-24	-Reading
Streams and fluvial landscapes	-Explore fluvial processes. -Make a topographic profile. -Characterize the shapes of stream valleys. -Describe stream drainage patterns.	-Lab
Reflection	-personal overview of the day.	-Self-assessment

The Reflection will be a daily activity at the end of each day. It will not be shown again!

WEEK 1/DAY 2

Morning		
Bay Productivity	-Describe nature of estuary. -Describe unique features of tides, salinity depth, turbidity, and temperature. -Relate stress level to water test results. -Describe sections of water and organisms that live there.	-Lecture/Q&A
Salt Wedge	-Correctly use scientific method to solve a problem. -Relate salinity to tides, seasons, etc. -Describe the salinity gradient.	-Lab

Afternoon	**Objectives**	**Methods**
Microscope care and use	-Correctly use and care for microscopes.	-Lecture/Use of scopes
External fish anatomy	-Compare structure to function. -Relate structure to diet, feeding patterns, Habitat, speed, etc. -Compare fin type to use.	-Lecture/Q&A/manipulation of organisms
Exotic species	-Describe the effects of exotic species on native ecosystems.	-Lecture/Q&A
Perch Dissection	-Identify the internal organs of a fish. -Compare structure to function.	-Lab

WEEK 1/DAY 3

Morning

Stillpond field trip/field Field report/questions All field trips will have these objectives. **Will not be repeated**.	-Specimen collection. -Observe watershed. -Practice collection techniques. -Collect and record water quality data. -Practice water safety.	-Water tests -Active collection techniques -Observation **These will be done on all trips and will not be repeated**.

Afternoon

Dichotomous keys	-Correctly use dichotomous keys.	-Practice with keys
Flora/fauna	-Intro to personal field guide parameters.	-Lecture
External Anatomy	-Describe the external anatomy of fish in more detail than previous exposure.	-Manipulation of specimens
Specimen ID	-Correctly use dichotomous keys. -Correctly use microscopes. -Correctly make a wet mount slide.	-Hands on use of scopes, keys, and Specimens

WEEK 1/DAY 4

Morning

Andelot Farm field trip/ Field report/questions	-Observe cliff formation/sedimentation. -Discuss geologic history of Estuary.	-Q&A/discussion/lecture -See WEEK 1/DAY 3
Soil Survey	-Compare nutrients on farm site to marsh. -Identify soil texture by different methods.	-Lab -Lab
Marsh Study	-Identify marsh plants.	-Lab

Afternoon

Specimen ID	-See Week 1/Day 3

WEEK 1/DAY 5

Morning	**Objectives**	**Methods**
Quiz #1	-Assess week one material.	-Brief Constructed Response
Identify soil texture	-Determine soil texture by touch and layering methods.	-Lab
	-Identify soil nutrient content.	-Lab
	-Identify soils by color.	-Chart comparison
ID specimens	-See Week 1/Day 3	

Afternoon

Skipjack reading	-Determine parts of the skipjack -Describe historical importance of ship type	-Peer reading/discussion
Fish Respiration	-Determine how temperature affects the respiration rates of fish. -Determine how temperature affects organisms in the Bay.	-Lab

WEEK 2/DAY 1

Morning/Afternoon

Skipjack/Marine Museum field trip/ report/Questions	-Observe historic work boat of the Bay. -Actively work on boat/sails, steer, dredge -Use of watershed maps to interpret data. -Explore a restored Bay lighthouse. -Explore the history of oystering. -Identify the differences in Bay fishing boats.	-Water tests -Dredge, drag nets, use field maps -Hands on work -See WEEK 1/DAY 3

WEEK 2/DAY 2

Morning

Problems associated with Bay	-Describe critical problems that affect watershed and Bay. -Determine possible solutions to each problem -Discuss sources of pollutants.	-Lecture/Q&A
Practice stream survey	-Identify macroinvertebrates -Relate organisms to index value -Determine relative importance based on index value	-Lab
Run-off	-Compare different substrates to run-off rates -Determine positives and negatives to each substrate.	-Lab

Afternoon

Specimen ID	-See WEEK 1/DAY 3
External Anatomy	-See WEEK 1/DAY 3

WEEK 2/DAY 3

Morning	**Objectives**	**Methods**
Unicorn Stream Survey/ Field report/Questions	-Evaluate stream based on water tests and macroinvertebrates. -Collect aquatic larvae and identify.	-Lab -See WEEK 1/DAY 3
Afternoon		
Bay Buffers	-Determine how land use affects sediment pollution. -Observe various land uses in watershed.	-Lab -Interpretation of satellite photos

WEEK 2/DAY 4

Morning		
Urieville Stream Survey/ Field Report/Questions	-See Unicorn Stream Survey WEEK 2/DAY 3	-See WEEK 1/DAY 3
Afternoon		
Bernie's Toes	-Determine how sediments affect Bay life. -Determine how nutrients affect Bay life. -Relate population increase to pollution And Bay grasses.	-Lab -Graph interpretations -Reading
Please Don't Feed the Bay	-Identify sources of nutrient pollution. -Relate nutrient levels to low dissolved oxygen levels. -Determine how lack of sunlight affects Bay grasses.	Lab
Maryland Tributary Strategies	-Compare polluted bodies of water to non-polluted bodies of water. -Identify sources of nutrient pollution.	-Interpretation of data

WEEK 2/DAY 5

Morning		
Quiz #2	-Assess week two material.	-Brief Constructed Response
Water Test Data Table	-Relate water test results to what these results mean. -Identify remedies to high/low readings. -Identify possible sources for those readings. -Identify dangerous/acceptable readings.	-Use of Water Tests
Schooling Behavior	-Exam the schooling behavior in various species of fish.	-Lab

Afternoon	**Objectives**	**Methods**
Oyster Dissection	-Describe internal/external anatomy of a keystone species.	-Lab

WEEK 3/DAY 1

Morning

Eastern Neck NWR trip/ Field report/Questions	-Introduction to salt water marshes. -Compare species diversity to fresh water sites -Discuss salinity gradient.	-See WEEK 1/DAY 3

Afternoon

ID specimens	-See WEEK 1/DAY 3	
External Anatomy	-See WEEK 1/DAY 3	

WEEK 3/DAY 2

Morning/Afternoon

Horseshoe Crab(HSC) Module

Anatomy/Life cycle	-Describe anatomy of HSC. -Describe life cycle of HSC. -Compare differences between sexes.	-Specimen analysis -DVD presentation
LDL and HSC	-describe medical benefits HSC's provide. -Describe the difference between gram-negative and gram-positive bacteria. -Describe endotoxins. -Compare HSC blood to human blood.	-Power point -DVD presentation
Economics and HSC	-Explore economic impact of HSC on impacted states. -Determine economic value of HSC. -Describe different jobs associated with the HSC.	-Graphing exercise -Reading -Analysis of data
Stakeholders	-Identify the forces associated with the HSC.	-DVD presentation
Values	-Identify bias in primary research sources -Describe values associated with sources.	-Interpret readings
Thumper	-Identify scientific method techniques used by waterman to solve critical problems.	-DVD presentation
Research role	-Identify arguments associated with assigned stakeholder group.	-Library research
Presentation	-Utilize all research to present at the town meeting.	-Presentation

WEEK 3/DAY 3

Morning	**Objectives**	**Methods**
Urieville Trip/Field Report/Questions	-Correctly use a cast net. -See WEEK 1/DAY 3	-See WEEK 1/DAY 3
Afternoon		
Schoolyard Report Card	-Identify the environmental positives and negatives of the campus and apply an objective grade.	-Campus walk through -Discussion and follow up report to the college
Chesapeake Bay Challenge	-Observe students performing action projections in Maryland.	-Video
Town Meeting	-See WEEK 3/DAY 2	-See WEEK 3/DAY 2

WEEK 3/DAY 4

Morning		
Andelot trip/Field Report/ Questions	-See WEEK 1/DAY 3	-See WEEK 1/DAY 3
Buffer	-Determine buffer capacity of an area of land bordering an area of water.	-Lab
Afternoon		
Lab Practicum	-Assess knowledge of scope of course.	-Station rotation practicum

WEEK 3/DAY 5

Morning		
Wash. Coll. Boathouse	-In depth personal reflection of stay and your thoughts about everything and anything.	-Reflection -Speaking