DSN S 446-546 Save the Bay! Designing for Health and Resiliency in the Chesapeake Bay Watershed

In this 4-6 credit advanced design studio, we will tackle issues and design challenges specifically related to one of the United States’ largest estuaries, the Chesapeake Bay. All disciplines are welcome!

“The Chesapeake Bay watershed is one of the most extraordinary places in America, spanning six states and the District of Columbia. As the nation’s largest and most productive estuary, the Chesapeake Bay and its vast network of more than 180,000 miles of streams, creeks and rivers, holds tremendous ecological, cultural, economic, historic and recreational value for the nearly 18 million people who live, work and play in the region (https://www.chesapeakebay.net/documents/FINAL_Ches_Bay_Watershed_Agreement.withsignatures-HIres.pdf )."

The Bay supports more than 3,600 species of plants and animals, including 348 species of finfish, 173 species of shellfish, over 2,700 plant species and more than 16 species of underwater grasses. The Chesapeake Bay watershed stretches approximately 524 miles from Cooperstown, New York, to Norfolk, Virginia. It includes parts of six states—Delaware, Maryland, New York, Pennsylvania, Virginia and West Virginia—and the entire District of Columbia, covering nearly 64,000 square miles. The Chesapeake Bay’s land-to-water ratio is 14:1: the largest of any coastal water body in the world. This is why human actions on land have such a big impact on the Bay’s health.

We will discuss global and local issues to better understand complex factors surrounding watersheds and watershed management within the Chesapeake Bay Region. We will investigate how our actions impact the world around us. And we will create educational, artful, and innovative design solutions as part of our collaboration with the Chesapeake Bay Foundation (CBF). The Chesapeake Bay Foundation is a nonprofit organization that has fought vigilantly for healthy rivers, clean streams, and to save the Chesapeake Bay, for over 50 years. Founded in 1967, the Chesapeake Bay Foundation (CBF) is the largest independent conservation organization dedicated solely to saving the Bay. The CBF has departments focused on education, advocacy, litigation, restoration, and land acquisition. They offer one to multi-day education programs throughout the watershed and specifically work with teachers and students to increase environmental sensitivity, knowledge, ownership, and empowerment through hands-on activities, curriculum development, and restoration projects.

In the late 90’s, I ran environmental education programs for CBF in Virginia for almost 5 years and I have a passion for improving the health and resiliency of this watershed. What we create with the Chesapeake Bay Foundation is yet to be determined but will likely include environmental education documents and master plans with design details and possibly a design-build in Virginia at one of the education centers.

How might we better design the world around us for future generations? How might we plan and design with rising sea-levels in mind? How might we make a difference?
NOTE: Students must be willing to camp, get muddy, explore, and learn through hands-on, experiential activities.

**Studio Goals:**

- Explore the Chesapeake Bay and its watershed
- Identify pressing issues and concerns related to the Health of the Bay and local people
- Connect with professionals and collaborate as needed (I usually have architects, landscape architects, and other design professionals plus environmental educators, scientists, and artists work with us directly. I try to get local professionals and local community members familiar with the site(s) to help us as well.)
- Collaborate with client/community members (We do this in person, and also, by way of zoom or some other video-conferencing tool)
- Learn about stormwater management, healthy ecosystems, watersheds, land use, zoning, wildlife, ecology, water quality, & people and culture of a place (or places) in the watershed
- Brainstorm, innovate, and create meaningful, sustainable, site-specific, culturally-relevant designs for the CBF
- Learn about and visit CBF’s LEED buildings: Philip Merrill Environmental Center (World’s First LEED Platinum Building) & the Brock Environmental Center (LEED Platinum plus Zero Carbon, Zero Waste, Zero Water Building)
- Learn about water quality issues through hands-on, immersive research and investigation
- Learn about ways to improve water quality
- Play with new technologies
- Explore seemingly crazy, out-there ideas like stormwater play: educational, fun ways to utilize stormwater; educational design ideas which clean and/or recycle water on-site (I’ve done this in 3 studios now and it’s great for brainstorming and deep research)
- Create portfolio quality work
- More to be added...

**STUDIO COSTS?** $1200 or less

Lodging: Will be camping and staying at CBF sites much as possible

Airfare: estimating $400-$450/person

Transportation: Rental 15-passenger van & boats & canoes

Sites to Visit: Annapolis, MD; Tangier & Port Isobel, VA; Hampton Roads, VA; and other sites along the DelMarVa peninsula and within the watershed

CBF education trips to be led by Bambi Yost and other dedicated CBF Educators & Staff

**Possible Projects/Sites (still investigating opportunities with the Chesapeake Bay Foundation):**

- **Philip Merrill Environmental Center Annapolis, MD:** Design and possibly build components of interactive and immersive, educational trails; create artful and educational signage; design outdoor buildings and outdoor classrooms to better engage and serve the public
• **Port Isobel, Tangier Island, VA**: Design and possibly build components of interactive and immersive, educational trails; enhanced building efficiency design ideation; investigate alternative energy sources and design options; create artful and educational signage; propose design solutions to address sea-level rises and climate change; design to enhance health of staff, visitors, and the Bay

• **Fox Island, VA**: Enhance sustainability with new energy ideas beyond the bicycle, wind, and solar options – figure out how to best grow fresh fruits and vegetables for staff and visitors beyond potted plants on the dock – work on an affordable desalination option...More theory and application driven – living off the grid.

• **Arthur Sherwood Study Center - Meredith Creek, Annapolis, MD**: As I recall this was once of the oldest sites we had. Not sure there have been trails added or outdoor classroom areas etc. but am gung it may still need trails, bird watching platforms, and other sweet elements

• **Floating wetland islands** which we have tested here at Iowa State University. I’d love to try some similar in the bay! [http://midwestfloatingisland.com/](http://midwestfloatingisland.com/) and [https://www.news.iastate.edu/news/2018/06/20/floating-islands](https://www.news.iastate.edu/news/2018/06/20/floating-islands)

• **Other innovative water cleaning and habitat restoration design ideas**: vertical farming, living walls, floating oyster reefs, river and bay cleaning tools that scoop up trash, and more

• **Trash to treasure**: Recycle gathered waste from waterways into art and usable products with affordable technology

• **Restoration and Maintenance Projects**: tree planting, SAV planting, wetland restoration, oyster seeding, trail maintenance, building repairs (basic carpentry and some electrical and plumbing with guidance), painting/mural/art projects, dock and boat launch repairs or builds

• **Identify possible future sites** to address climate change on the Bay and further inland

**Field Trip Date Options:**

MAX TIME: 10 full days to explore the watershed, visit environmental centers, meet with staff, conduct design charrettes/and/or build/create/restore something (ideally with other volunteers, staff, and/or students), and get a taste of the Bay

Arrive the evening of Wed, March 13th (Spring Break Monday - Friday, March 18-22) and leave Sun, March 24th

OR

Arrive the evening of Friday, March 15th (Spring Break Monday - Friday, March 18-22) and leave Tues, March 26th

**Typical deliverables:**

A written master plan with design document set which includes:

- site analysis
- site design
- program elements
- conceptual design ideas
- design details
- grading plans
- building plans
- feedback and community/client input at all stages of design
- idea boards
- curriculum materials and educational elements
- multiple options if desired o one final design reached by consensus
- illustrative renderings (masterplans, sections, perspectives, etc. as needed)
• 3-D models (varies: Physical, SketchUp, Rhino, Revit, and/or others)
• CAD details and drawings
• stormwater management plans (at least schematic and conceptual, sometimes more detailed)
• design construction details
• phasing educational elements plans based on community/client priorities and funding
• planting plans with seasonal & educational information
• signage and wayfinding details
• preliminary budgets and budget projections

Sometimes we create the following:

• Design-build documents
• existing and proposed design videos to show to potential donors (depends on student skills and quickly we get details worked out)
• budget estimates (really depends on how detailed we get and how accessible local costs are for us from afar)
• architectural structural details for buildings (depends on students and how many outside architects I can get to help)
• larger scale green infrastructure master plans
• 3-D printing, using found materials in a new way
• GIS data and interactive educational tools (depends on students’ skills typically in GIS and coding apps for phones and other online tools)

REQUIRED READINGS (In progress)


Robertson, K. (2016). Resilient History: Protecting Chesapeake Bay Coastal Historic Districts from Rising Seas Through Adaptive Planning.


WEBSITES:
Chesapeake Bay Foundation http://www.cbf.org/