Bucknell on the Susquehanna

People Landscapes, and Nature ... from the Chesapeake to the Puget Sound

ENST 291 - Course Schedule (tentative)

Date	Topic
May 14 Monday	Introduction to the Susquehanna watershed, its landscape and people; view from Shikellamy overlook, **Native Americans and early European colonization of the valley** and engineering marvels: the construction of **canals** networks; **railroads** in Northumberland; **levees and Sunbury flood wall**; lunch along the river; tour of the world's largest **fabridam** and proposed **migratory fish passageways**.
May 15 Tuesday	**Native Americans** and the Susquehanna River - 700 years of life in the watershed and native people groups today. Possible trip up the North Branch of the Susquehanna River to the headwaters near Lake Otsego; meet leaders of the Haudenosaunee Nation or the "People of the Longhouse" and learn about the stream and wetlands conservation efforts they have underway.
May 16 Wednesday	**Wetlands** and **catchment hydrology** in the glaciated highlands of the Susquehanna watershed; **hydroclimatology of mid-Atlantic watersheds.** **Coal mining** in the watershed. Tour of the Thomas NE strip mine near English Center to learn about modern mining engineering and innovative ways to treat AMD discharges.
May 17 Thursday	**Natural gas** extraction. Overview of the geology of the watershed, the Marcellus shale formation, and guided tour of a natural gas well site and frac water treatment facility in Muncy.
May 18 Friday	**Wilderness sojourn down the Susquehanna River** from Button Riffle to below Karthaus (Sproul State Forest). How log rafts were constructed to enable 80,000+ board feet of lumber to Lock Haven, Williamsport, and Chesapeake Bay markets. History of bog iron ore extraction and coal tipples too. Aquatic ecosystems in the upper branches of the Susquehanna River.
May 19 Saturday	**Flow hydraulics, sediment transport, and bedforms of the Susquehanna River**. Paddle sojourn down the West Branch, from to Renovo. **Ecology of the river** and recovery from abandoned mine discharge and pollution over the past 100 years. Overview of Superfund sites and large industrial facilities along the river and engineering and remediation technologies used at the Drake Chemical plant
May 20 Sunday	**Hydroelectric and nuclear power** along the Susquehanna River. Leave campus around 11 am and drive down the Susquehanna River to Holtwood Dam. View shad migration

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May 21 Monday	**Natural history and ecology of the Chesapeake Bay and the Susquehanna Flats**. Geologic evolution of the Chesapeake Bay, estuary dynamics and tidal marshes; tour of Smithsonian Environmental Research Center wetland facilities. Camp on the beach. Blue crabs and the waterman of the Chesapeake; the moon, meteorites, tides, and the bay.
May 22 Tuesday	**Urban stormwater runoff and pollution**; tour of Chesapeake Bay Foundation's green building; chemistry and sampling of waters in Baltimore Harbor with CBF ecologist.
May 23 Wednesday	Catch up and overflow day. Discussion and synthesis of Susquehanna watershed findings; **journals, data interpretation and mapping of findings**; pack and organize gear, notes, and thoughts for the second half of the course.
May 24 Thursday	**Travel to Pacific northwest**. Drive down to Harrisburg airport, board plane to Seattle, arrive at SEATAC in late afternoon (Pacific time), pick up rental vehicles, drive to downtown Seattle and check in to hotel, dinner on the waterfront.
May 25 Friday	**Urban sustainability projects; civil engineering to improve storm water runoff;** creating a sustainable Seattle.
May 26 Saturday	**Mt. Rainier National Park -** the **geologic history of the Pacific northwest** and **Puget Sound**; **volcanic hazards and risk mapping** in Tacoma urban corridor; **forest ecotones;**
May 27 Sunday	Sea kayaking to observe **marine life along the coast** and view of Mt. Rainier from the ocean; on-the-ocean discussions of **estuary contamination and sources of pollution**; development of a **hydrodynamic model to evaluate restoration alternatives** and impact of **global climate change**.
May 28 Monday	**Nisqually river and estuary restoration projec**t; impact of logging and hydroelectric dams on Pacific northwest rivers and anadromous fish populations; Squaxin Island **fisheries and forest co-management**
May 29 Tuesday	Lake Quinault, **temperate rainforest ecology**; **hydroclimatology of Pacific northwest coastal watersheds**.
May 30 Wednesday	Continued field studies of **Lake Quinault** and the **Quinault River**, Olympic Northwest Fisheries organization (co-management Quinault Tribe and Northwest Fisheries Society)
May 31 Thursday	**Olympic peninsul**a; forest hydrology and ecology; river-bay connections and the salt-water/fresh water interface.
June 1 Friday	**Puget Sound coastal-intertidal ecology**; goeduck mussels;
June 2 Saturday	**Puget Sound and Olympia area**. Wrap up discussions, reflections, and student presentations.
June 3 Sunday	**Travel back to Bucknell.** Return trip from Seattle to Harrisburg, then drive back to campus, arriving by 7 pm.