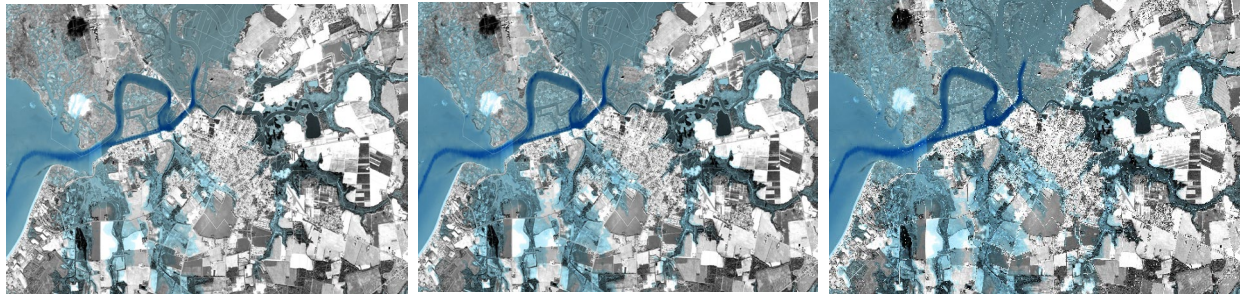


Shore Up: Rural Resilience for a Changing Climate



Synopsis

Flooding is the most common and costly natural disaster in the United States. Rising water levels and increased rainfall pose a major threat to rural communities already facing population decline and reduced services. Programs like FEMA's Community Rating System (CRS) aim to reduce flood costs for residents, but many small municipalities in the Delaware Bay region, like the City of Salem, cannot participate due to the high costs of preparing watershed and flood mitigation plans. These challenges are further exacerbated as many of these small bay communities have a large number of historic structures, which have additional regulatory demands for adaptive measures to retain historic integrity.

As part of Rutgers University's Megalopolitan Coastal Transformation Hub (MACH) program, this course will develop a *Delaware Bay Rural Resiliency Toolkit* to support rural municipalities in developing and implementing multi-scalar (watersheds, neighborhoods, and coasts) mitigation strategies that strengthen historic identity, wetland restoration, and flood reduction. As the inaugural seminar in a multi-year funded endeavor, its outcomes may serve as the foundation for subsequent studies and EMLab Research Assistantships associated with the MACH research collective.

The seminar will be taught in collaboration with Historic Preservation faculty, which will include a module on cultural landscape considerations. Field trips, guest lectures, case studies, and readings will supplement in-class software demos.

Eligibility

Availability is limited to **LARP, CPLN, & HSPV** students who have successfully completed **LARP 543 Media III** or equivalent; others by permission of the instructor.

Background

In coastal communities across the United States, a pressing triage-like process is emerging as rising sea levels and more intense storms compel policymakers to prioritize which people and places must be prioritized for protection. The current approaches to climate policy and planning are heavily skewed toward well-resourced communities that are demographically, financially, and administratively advantaged. While vital hubs of culture and capital, the complex technical and administrative risk reduction strategies—generally justified by cost-benefit analyses—tend to unfairly divert attention from rural areas. These regions are not only crucial to the economic and logistical operations of urban centers but also bear a disproportionate burden of climate change impacts.

Although comparatively small in geographic area, New Jersey possesses one of the highest coastline-to-area ratios in the nation, rendering it particularly susceptible to climate-related storms and rising sea levels. It is also the most densely populated state (~1,300 people per sq. mi.) while still having vast acreages of wetlands, forests, and farms. Given these geographic and demographic circumstances, New Jersey has accordingly taken a proactive approach to climate mitigation and risk reduction strategies, rather than relying solely on the typical post-recovery, reactive emphasis that predominates. Indicative of this stance, in 2020, the New Jersey Department of Environmental Protection (NJDEP) released the 80x50 Climate Action Plan. The plan outlined strategies to cut the state's greenhouse gas emissions by 80% before 2050. Preserving and enhancing carbon sequestration serves as a key element in attaining this goal beyond the rapid expansion of clean energy capacity. Subsequently, the Natural and Working Lands Strategy (NWLS) was launched in 2023 to incentivize actionable targets for increased sequestration. Stressing preservation and expansion of wetlands, aquatic habitats, forests, and agricultural land, the strategy places a high value on the types of land cover and land use that predominate in rural communities. These natural and working lands are essential to the economies and cultures of rural bay communities. Focusing on their preservation and enhancement presents a fertile opportunity to significantly boost climate resilience and flood protection for these vulnerable natural and cultural rural landscapes.

Indicative of Jersey's southern coast, natural and working lands dominate Salem County. Thus, it serves as an excellent jumping-off point for developing a *Delaware Bay Rural Resiliency Toolkit*, a strategic initiative designed to adapt conventional landscape design and planning methodologies to align with the specific needs and priorities of rural communities. Additionally, the preservation and enhancement of natural and working lands provide the twin benefit of making communities eligible for other state and federal assistance, such as FEMA's Community Rating System (CRS). The CRS is a voluntary program under the National Flood Insurance Program (NFIP) that recognizes and incentivizes communities that reduce their flood risk through proactive measures like improved floodplain management, early warning systems, and public awareness initiatives.

Megapolitan Coastal Transformation Hub (MACH)

This interdisciplinary MLA + HSPV seminar is part of a larger, ongoing project. MACH is a long-term, multi-institutional initiative funded by an NSF award and led by Rutgers University, with approximately 20 additional partner institutions across the mid-Atlantic. Its goal is to aid decision-making in managing climate change risks through research at the intersection of natural and human systems. These collaborations emphasize community participation and co-production of climate strategies. As such, the ideas and products from this seminar will serve to enrich the larger research community, in addition to providing, hopefully, tangible benefits to the coastal rural communities it aims to support.

Structure

The class will meet during one action-packed session every **Tuesday** from **10:15 am - 1:15 pm** in **Lab 321**. Class attendance (and punctuality) is mandatory, as much of the content involves in-class exposition. The course is an exploratory think tank; it requires active participation. Sessions will include demonstrations of relevant techniques, topical presentations, reading discussions, and hands-on working sessions.

Design-Research

Part of the seminar's goal is to develop an actionable strategy for landscape architects to support the proactive flood reduction plans and policies of under-resourced, rural communities, such as those supported by FEMA's CRS. The Disaster Mitigation Act (DMA) of 2000 requires local governments to create a pre-disaster hazard mitigation plan (HMP) to qualify for federal aid in the event of overwhelming disasters. Communities often neglect to develop nuanced HMP strategies; instead, they opt for generic plans that meet federal minimums, rather than creating tailored approaches that meaningfully respond to local resilience-building needs and opportunities. Your final projects

will be a key part in collectively scoping a set of more tactical and tangible toolkit of responses, spatially and financially.

To this end, individuals or pairs will identify and develop an *NWLS Action Plan* for the Salem community to achieve CRS eligibility with the highest point total. The evaluation of the strategy will depend on the likelihood of its implementation. Hence, the NWLS strategy must be administratively and financially feasible. The strategy must also bridge scales, from the watershed to the neighborhood level. Additionally, Salem, the county and city, has a rich array of historic landscapes and buildings. The strategies should place additional emphasis on the social value of preserving and enhancing natural and working lands that are deeply ingrained in rural identities and economies.

Software/Hardware

Rhino 8, Grasshopper, and ArcGIS Pro. Assignments requiring advanced geospatial processing will be supplemented with pre-recorded/ in-class demonstrations. Most analysis methods will not exceed the technical capacities gained from the core media sequence, however. Be sure to give yourself ample time and actively seek support if you are having any issues understanding a task or assignment, regardless.

Communication/ Scheduling

Please be sure to check your Penn Design email regularly, as periodic updates, notices, or issues may be sent electronically. Class announcements and appointments will also be communicated via [Email](#). All course materials will be stored and submitted on **BOX**. Class demos will be recorded via **ZOOM** and uploaded to **BOX** after class for your continued learning. Please do not share the videos with anyone outside of the class. Lastly, please keep your in-class electronic communication to a minimum, as it can be disruptive to both the instructor and your fellow classmates.

Concerns/ Contingency

The syllabus should be understood as a guideline. If you have any concerns or questions about the tasks outlined in this syllabus, please do not hesitate to contact me. If issues arise that you do not feel comfortable discussing with me, please contact Kayla Richards at Student Services: kayr@design.upenn.edu.

Although the COVID-19 pandemic is now considered endemic, several uncertainties remain that could impact the course schedule. While your health and well-being are important, in-person course participation is mandatory unless you have a health or family emergency. **Permitted absences are only granted with advance notice and may require support documentation.** If you are ill or expect that you have been exposed to COVID-19, please follow the University guidelines and notify me before the start of class.

Grading

Class attendance and punctuality are mandatory, as much of the content involves hands-on demonstrations. Students arriving more than **10 minutes late will be considered absent**. More than **2 unexcused absences** will result in a reduced grade. **Late submittals** will be **penalized 1/3 grade per day**.

The individual exercises comprising the first part of the semester will account for 20% of the course grade. The latter design-research project will account for 60% of the course grade. Finally, class participation will account for 20%.

- A+ (4.0) = Excellent; exceptional work quality + no missed or late assignments
 - A (4.0) = Very Good; above average work quality + no missed or late assignments
 - A- (3.7) = Good; above average work quality + a missed or late assignment
 - B+ (3.3) = Satisfactory; average work quality + a missed or late assignment
 - B (3.0) = Marginal; average work quality + missed or late assignment(s)
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- B- (2.7) = Unsatisfactory; below average work quality + missed or late assignment(s)
 C+ (2.3) = Very poor; poor quality + missed or late assignments
 C (2.0) = Unacceptable; poor quality + missed or late assignments
 C- (1.7) = Unacceptable; poor work quality + missed or late assignments
 F (0.0) = Unacceptable; poor work quality + missed or late assignments

Cheating is a serious academic offense and grounds for course failure and/ or school expulsion. Cheating is the use or attempted use of another's material as your own. This includes any idea, image, drawing, or text that is taken from another source, such as an article or online. Any use of ideas or materials must be properly credited by citing the author(s) and source(s). Refer to the *Code of Academic Integrity* for details:
http://www.upenn.edu/academicintegrity/ai_codeofacademicintegrity.html

Land Acknowledgement

This course is based in Philadelphia, Pennsylvania, where we acknowledge Lenapehoking as the ancestral homeland of the Lenni-Lenape and work to support indigenous communities and their connections to the land. As land designers and stewards, we work to support indigenous communities and affirm their presence and connection to their ancestral homelands.

Preliminary Schedule

Week 1 (Jan. 20)	Orientation Introduction NJDEP Natural & Working Lands FEMA Community Rating System (CRS) Inventory Census and Community Vulnerability Demo Reading Modules Assigned Exercise #1 Assigned: CRS Inventory	
Week 2 (Jan. 27)	Cultural Landscapes I Cultural Concepts and Ideas Reading Module #1- Cultural Landscape Theory Due + Discussion	CANCELLED- SNOW DAY
Week 3 (Feb. 03)	Cultural Landscapes II/ Agricultural Lands Cultural Concepts and Ideas CRS Inventory In-class Review Reading Module #1- Cultural Landscape Theory Due + Discussion Exercise #1 Due: CRS Inventory	
Week 4 (Feb. 10)	Natural & Working Lands (NWLS) Inventory I Charlie Sidoti/ Steve Brandt, InnSure Natural & Working Lands Suitability Demo Reading Module #2- Rural Studies Theory Due + Discussion Exercise #2 Assigned: NWLS Inventory	

Week 5 (Feb. 17)	Natural & Working Lands (NWLS) Inventory II Ellen Kohler, Penn Water Center NWLS Inventory In-class Review Reading Module #3- Rural Resiliency Due + Discussion NWLS Planning + Finance Strategy Assigned	
Week 6 (Feb. 24)	Travel Week No Class	TRAVEL WEEK
Week 7 (Mar. 03)	Cultural Landscapes II Operationalizing Cultural Landscape in Design + Preservation Reading Module #4- Cultural Landscape Operations Due + Discussion Exercise #2 Due: NWLS Inventory	
Week 8 (Mar. 10)	Spring Break No Class	SPRING BREAK
Week 9 (Mar. 17)	Field Study Nicholson House Visit	
Week 10 (Mar. 24)	Cultural Landscapes III Erman Eruz, HR&A Adapting Cultural Landscape Concepts + Models Reading Module #5- Cultural Landscape Practices Due + Discussion	
Weeks 11 (Mar. 31)	CRS Strategy I Jie Gong, Rutgers Civil Engineering Jana Savini + Martha Maxwell-Doyle, Partnership for the Delaware Estuary (PDE) Exercise #3a Due: NWLS Preliminary Strategy + Finance Presentation 01	
Weeks 12 (Apr. 07)	CRS Strategy II Travis Klondike, NC Coastal Dynamics Design Lab Exercise #3b Due: NWLS Preliminary Strategy + Finance Presentation 02	
Week 13 (Apr. 14)	CRS Workshop Self-guided work session No Class	SAN FRAN/ NO CLASS!
Weeks 14 (Apr. 21)	PRE-REVIEW In-class Workshop	
Week 15 (Apr. 28)	REVIEW (last week of classes) Final presentation & discussion	FINAL REVIEW

Bibliography

Readings/ Resources will be available as PDF files on **BOX**. Please read the required readings prior to class and be prepared to contribute to the roundtable discussions.

Module 1- Cultural Landscape Theory (Jan. 27- 32 pgs.)

- Cook, Robert. "Is Landscape Preservation an Oxymoron?" *The George Wright Forum*, 13(1), 1996. [pp.1-12]
- Groth, P., "Frameworks for Cultural Landscape Study" from Paul Groth and Todd Bressi, eds. *Understanding Ordinary Landscapes*. New Haven: Yale University Press, 1997. [pp.1-21]

Module 2- Rural Studies Theory (Feb. 03- 65 pgs.)

- Brown, T., Mettler, S. and Puzzi, S. "When Rural and Urban Become "Us" versus "Them": How a Growing Divide is Reshaping American Politics," *The Forum*, vol. 19, no. 3, 2021. [pp. 365-393]
- Cloke, P., "Conceptualizing Rurality," from Paul Cloke, Terry Marsden, and Patrick Mooney, eds. *Handbook of Rural Studies*, Sage, 2006. [pp. 18-28]
- Thomas, A., et. al., "What is Rural," from Thomas, A., et. al., eds. *Critical Rural Theory: Structure, Space, Culture*, Lexington Books, 2011. [p. 5-32]

Module 3- Rural Resiliency + Preservation (Feb. 17- 59 pgs.)

- Jurjonas, M., Seekamp, E., "Rural Coastal Community Resilience: Assessing a Framework in Eastern North Carolina," *Ocean & Coastal Management*, Vol 162, 2018. [pp. 137-150]
- Rumbach, A., Bierbrauer, A., & Follingstad, G., "Are We Protecting Our History? A Municipal-Scale Analysis of Historic Preservation, Flood Hazards, and Planning," *Journal of Planning Education and Research*, 44(1). [pp. 88-101]
- Fatorić, S, Seekamp, E., "A Measurement Framework to Increase Transparency in Historic Preservation Decision-making under Changing Climate Conditions," *Journal of Cultural Heritage*, Vol 30, 2018. [pp 168-179]
- Stiles, William, "All Adaptation is Local," *Issues in Science and Technology*, 30(2), 2014. [pp. 57-64]

-Optional

- Smith, K., "The Unequal Impacts of Floods," *The Headwaters Economics* online mapping tool: [The unequal impacts of flooding - Headwaters Economics](#).

Module 4- Cultural Landscape Operations (Mar. 03- 27 pgs.)

- Watt, A., "Landscapes, Preservation, and the National Park Ideal," Chapter 1 in *The Paradox of Preservation* (University of California Press, 2017) [pp.13-29]

Module 5- Cultural Landscape Practices (Mar. 24- 21 pgs.)

- Desilvey, C. "Postpreservation: Looking Past Loss" in *Curated Decay: Heritage Beyond Saving*. (University of Minnesota Press, 2017). [pp.1-21]

Resources/ Reports (Primary marked **BOLD**)

--Federal (BOX)

- **FEMA New Jersey Mitigation Resource Guide (2020): New Jersey Mitigation Resource Guide**

- **FEMA National Flood Insurance Program (NFIP), Community Rating System Coordinators Manual (2025)**
- Federal Emergency Management Agency (FEMA), A Guide to Supporting Engagement and Resiliency in Rural Communities (2020)
- USDA Rural Development, Disaster Resiliency and Recovery Resources: A Guide for Rural Communities

--Federal (ONLINE)

- **National Oceanic and Atmospheric Administration (NOAA): [Resilient Rural America Project](#)**
- **U.S. Climate Resilience Toolkit (NOAA): [Funding & Capacity | U.S. Climate Resilience Toolkit](#)**
- National Conference of State Legislatures (NCSL): [Challenges Facing Rural Communities](#)
- Rural Partners Network (Rural.gov): [Programs & Opportunities](#)
- U.S. Department of Agriculture (USDA): [Rural Economic Development Loan & Grant Programs](#)

--State (BOX)

- **Flood Mitigation Guide for Historic Properties, NJ Historic Preservation Office DEP (2019)**
- **A Strategy to Advance Carbon Sequestration on NJ Natural and Working Lands, NJDEP & NJDA (2024)**
- **New Jersey Mitigation Resource Guide (2020)**
- New Jersey Statewide Flood Resilience Initiatives (2025)
- NJDEP Planning for Resilience Context Report_Resilient Salem (2023)

--State (ONLINE)

- Rural Partners Network (Rural.gov): [Programs & Opportunities](#)

--County/ City (BOX)

- Salem County Historic Sites Inventory (1967)
- Salem County Dept. of Planning & Agriculture, Land Development Standards for Salem County (Dec 2011)
- Salem Waterfront Redevelopment Zone Plan (2018)

--NGO/ Academic

- Coastal Dynamics Design Lab, Historic Resilience Primer: Resilient Adaptation Strategies for North Carolina's Historic Properties (2023)
- Coastal Dynamics Design Lab, Rural Resilience Framework: Disaster Adaptation Strategies for Building Rural Resilience (2023)
- Baldwin, et. Al, "Practices: Nature-Based Solutions for Flood Mitigation in Eastern, Rural North Carolina" in Land vol 11, 1504 (2022)

--State- Open Space Conservation (ONLINE)

- **NJDEP Green Acres Program: [Protecting New Jersey's Open Spaces | Green Acres](#)**
- **New Jersey Conservation Foundation: [New Jersey Conservation Foundation | Home](#)**
- NJDEP Division of Science and Research: [NJDEP| Division of Science and Research | Open Space Preservation](#)