# DENIN Environmental Scholars Internships

Dates of internship: June 1, 2020 to August 1, 2020

Location: Earth Sciences, Penny Hall, University of Delaware, Newark, DE 19711 Number of positions available: 2

Faculty Mentor: Dr. Holly Michael Graduate Student Mentor: Ryan Frederiks

Research Mentor: Dr. Chelsea Peters and Dr. Anner Paldor

# Project Title:

The Effect of Groundwater Pumping on the Salinization of Coastal Streams (Threat 1)

# Research Description:

The primary goal of this project is to understand the relationship between groundwater pumping in coastal aquifers and the salinity of streams in coastal watersheds. As groundwater levels drop due to pumping, subsurface flow into coastal streams (termed baseflow) will be reduced. Our hypothesis is that this reduction in baseflow causes the salinity of coastal streams to increase due to saltwater intrusion from the sea. The main research goals of this internship are to

1. Identify coastal watersheds in which this phenomenon is likely happening.
2. Collect data on flow rates, water quality, meteorological conditions, and land use in identified watersheds from (1).
3. Process and interpret the data to explore temporal trends in coastal water resources.

# Student Learning Objectives:

This internship focuses on the development of the following professional and scientific skills.

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| Broad Professional Skills | Specific Skills |
| Planning and time management | Ability to set and complete specific goals of varying scope. |
| Express ideas in writing | Write descriptions of research procedures, create a poster of your research, communicate via email professionally and in a  timely and consistent fashion. |
| Express ideas verbally | Discuss research activity in lab meetings, present a poster at a  symposium. |
| Work independently | Independent work ethic – work independently or with peers to  problem solve. |
| Develop professional network | Work with the lab team to develop a professional network, and  utilize peer-groups to problem solve. |
| Maintain a professional attitude and work principles (i.e. integrity, responsibility,  diligence, following ethical standards) | Be on time, learn procedures, ask questions if unsure, respect everyone you work with |

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| Broad Scientific Research Skills | Specific Skills |
| Understand scientific terms | Behavioral, experimental and environmental economics |
| Locate scientific articles and resources | Conduct searches for literature on environmental valuation |
| Understand research questions | Deconvolve an overarching goal into specific research questions  that can be tackled with the available tools. |
| Read and understand research articles | Present previous papers as part of the establishment of the  research goals and questions. |
| Apply research tools and techniques | Participate in the identification, organization, and analysis of  relevant hydrologic data sets |
| Understand, apply, and explain scientific  concepts and theories | In group meetings, in written reports, and during a research  symposium |

# Prerequisites:

Experience with data analysis, Excel, and GIS. Introductory experience with hydrology (e.g., successful completion of GEOL 428/628, CIEG 469, or similar course) is a plus.

# Work Environment and Expectations:

Laboratory environment: Work will be remote and regular access to the internet will be required. Hours are flexibly determined between student and mentor. Students will work 6-10 hours during the summer from June 1, 2020-August 1, 2020. Students will participate in virtual, external, or on-campus research symposium in the fall.

# Stipend:

$4,000. Direct deposit is required.

# Funding Source:

National Science Foundation, Delaware EPSCoR Track I

# How to apply:

# <https://ugresearch.udel.edu/PUB_Program.aspx>