**DENIN Environmental Scholars Internships**

Dates of internship: May 4, 2020-May 29, 2020

Location: Wesley College, remote

Number of positions available: 4

Faculty Mentor: Dr. Stephanie Stotts

Graduate Student Mentor:

Professional Staff Mentor:

**Project Title:** Geographic Information System Education for Spatial Analysis of Delaware BasedResearch Questions

**Research Description:**

This lab-oriented education provides an introduction to the theory and practice of Geographic Information Systems (GIS) with a focus on ESRI’s ArcGIS Pro. Participants will learn to collect, store, manage, query, analyze, and present geographic information before applying these skills to explore a Delaware based research question. Once completed, these independent research projects will be presented to the group in conference style format.

**Research Objectives:**

Educational Objectives

1. Understand representation in GIS, and describe the associated different data structures and map generalizations
2. Discuss the nature of geographic data, including the relationship between scale and the level of geographic detail in a representation
3. Describe georeferencing, including the basic principles of map projections
4. Discuss the concept of uncertainty, and its propagation through geographical analysis
5. Describe and apply key principles of cartography and map production
6. Perform various spatial data analysis and inference

Project Objectives

1. Generate a scientifically informed research question
2. Collect a quality dataset
3. Input the dataset into ArcGIS Pro and complete a spatial analysis
4. Produce results in a visually effective format
5. Interpret results
6. Effectively present the project to an audience

**Student Learning Objectives: Professional and Research Skills**

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 verbally | Discuss research activity in virtual meetings, present oral presentation |
| Work independently | Independent work ethic – work independently to problem solve  |
| Maintain 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  | Become familiar with terminology used in geospatial applications |
| Locate scientific articles and resources | Conduct searches for literature on environmental valuation |
| Understand research questions |  |
| Apply the scientific method to answer a research question |  |
| Apply research tools and techniques in research experiments  | Gather publically available data, format the data, import into ArcGIS Pro, Analyze the data, and present the results |
| Understand, apply, and explain scientific concepts and theories | In small group class settings and in the final research presentations |

**Prerequisites:**

Completion of a statistics course is required.

**Work Environment and Expectations:**

Laboratory environment: Work will take place remotely using platforms available through Wesley College. Students will complete all work between May 4, 2020 and May 29, 2020.

**Stipend:** Project-work completed for course-credit

**Funding Source:** National Science Foundation EPSCoR RII-IV Grant No. 1757353 and the State of Delaware.

**How to apply:** https://ugresearch.udel.edu/PUB\_Program.aspx