**DENIN Environmental Scholars Internships**

Dates of internship: June 7, 2021 through August 13, 2021

Location: Based on the ever-changing campus response to COVID student projects can be conducted in-person, virtually or hybrid depending on safety, feasibility and campus protocol. **This internship will be virtual.** If it becomes safe, feasible, and allowed through campus protocol, working in person will take place at theCenter for Experimental and Applied Economics, Townsend Hall, University of Delaware, Newark, DE 19711

Number of positions available: 1-2

Faculty Mentor: Dr. Yao Hu

Postdoctoral Research Fellow Mentor: Lusi Xie

**Project Title:** Developing a modeling tool to study human behavior and water system using Java and Netlogo

**Research Description:**

Heterogeneity in farmers’ irrigation decision making can result in different levels of crop production and nonpoint source water pollution. The project aims to develop a modeling tool (i.e. agent-based model) using Java and Netlogo to integrate economic experiments and eco-hydrologic models. The modeling tool will be used to simulate production and pollution outcomes under different ambient tax/subsidy policy scenarios. Outcomes of policy scenarios will be evaluated based on social welfare and water pollution, with various sensitivity analyses.

**Research Questions:**

1. Which policy scenarios can lead to socially desirable outcomes, measured by social welfare? Which policy scenarios can lead to optimal environmental outcomes by minimizing water pollution?
2. How does heterogeneity affect the above socially desirable and pollution outcomes? What roles do interactions and social comparisons play in these outcomes?

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

The DENIN scholars program helps students develop skills that foster future research interest and professional success.  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 scopes |
| Work independently | Independent work ethic - work independently to problem-solve |
| Collaborative skills | Learning to complete tasks efficiently and effectively with others in different academic backgrounds |
| Express ideas in writing and verbally | Communicate with diverse audiences - Development of impactful poster and oral presentations. Honing ability to deliver scientific results/impacts to people of interdisciplinary background. |
| Develop professional network | Work with lab team and Project WiCCED team to develop professional network, and utilize peer-groups to problem solve. |

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| Broad Scientific Research Skills | Specific Skills |
| Understand scientific terms | Behavioral, experimental and environmental economics, agent-based models |
| Literature analysis | Ability to effectively find and utilize scientific manuscripts for model calibration |
| Programming | Software development and Java |
| Understand, apply, and explain programming syntax | In lab meetings, with lab personnel, and during research symposium |
| Visualization | Visualize programming and modeling outcomes using Netlogo and GIS |

**Prerequisites:**

Introductory experience with object-oriented programming languages (e.g. Java) is preferred.

**Work Environment and Expectations:**

Office/economics laboratory environment: Work will primarily take place **on zoom**. Hours are flexibly determined between student and mentor.

**Stipend:**

$3,500. Direct deposit is required.

**Funding Source:**

National Science Foundation, Delaware EPSCoR Track I

**How to apply:** <https://ugresearch.udel.edu/PUB_Program.aspx>