





Faculty Member Contact Information

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| Contact Info | |
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| Department | Geography & GIS ; Environmental Sciences |

1 Funded, URCA Assistant

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| | This position is ONLY open to students who have declared a major in this discipline. | M |
| | This project deals with social justice issues. |  |
| X | This project deals with sustainability (green) issues. |  |
| | This project deals with human health and wellness issues. |  |
| | This project deals with community outreach. |  |
| | This mentor's project is interdisciplinary in nature. | I |

Are you willing to work with students from outside of your discipline? If yes, which other disciplines?

- I am open to taking students outside of my discipline, but only those in similar fields.

How many hours per week will your student(s) be required to work in this position?

(Minimum is 6 hours per week; typical is 9)

- 6

Will it be possible for your student(s) to earn course credit?

- Yes; 3 credit hours of ENSC 499

Location of research/creative activities:

- Alumni Hall and Science West at SIUE

Brief description of the nature of the research/creative activity?

Projected water use and renewable water supply are essential for assessing future water needs and provide valuable information for stakeholders involved in decision-making. Water availability is not always aligned with demand, as supply is influenced by climate trends, while demand is affected by changing usage patterns. Both demand and supply require better quantification to evaluate future water allocations.

In this project, the student will work on one piece of the puzzle-water use projection, so that the impact of projected demand on hydrology can be evaluated for the future. The student will estimate water withdrawals for each county in Illinois by analyzing past trends, regional growth and decline patterns, and calculating water use efficiency across different sectors. The project will also account for socioeconomic factors such as population growth, income levels, and the extent of irrigated land to project future water demand.

The findings from this project will enhance our understanding of future water demand, helping stakeholders make informed decisions regarding sustainable water use and management.

Brief description of student responsibilities?

The student participating in the project will be responsible for a wide range of tasks that contribute to a comprehensive research experience. Responsibilities include conducting literature reviews, collecting and analyzing secondary hydrological data, such as water withdrawals, population trends, income levels, and irrigated areas, and applying statistical analysis to extrapolate past trends. The student will also create plots, maps, and other visual representations to support their findings. In addition to managing and processing the data, the student is expected to document methods and procedures clearly. Active participation in lab meetings, timely completion of all assigned readings and exercises, and professional conduct throughout the project are essential as well.

URCA Assistant positions are designed to provide students with *research or creative activities* experience. As such, there should be measurable, appropriate outcome goals. What exactly should your student(s) have learned by the end of this experience?

By the end of this URCA Assistant experience, the student will have developed a strong foundation in statistical modeling methods, data synthesis, and critical thinking. The student will have learned how to apply environmental data to modeling systems, present their findings through tables, graphs, and maps and effectively validate their data and results. Additionally, the student will gain valuable experience in identifying both current and future research needs, writing scientific reports, and may have the opportunity to present their work at local or regional conferences, including the Illinois State Academy of Sciences. This project will equip the student

with foundational knowledge, practical experience, and critical analysis skills, enabling them to understand the real-world challenges of water resource management.

Requirements of Students

If the position(s) require students to be available at certain times each week (as opposed to them being able to set their own hours) please indicate all required days and times:

- The work schedule is flexible, and remote work options are available.

If the location of the research/creative activities involves off campus work, must students provide their own transportation?

- N/A

Must students have taken any prerequisite classes? Please list classes and preferred grades:

- The student should have a good understanding of computational skills.

Other requirements or notes to applicants:

- None