Faculty Member Contact Information

Name	Joseph Kusi
Contact Info	
SIUE Email	jkusi@siue.edu
Campus Box	1099
Department	Environmental Sciences

1 Funded, Unfunded URCA Assistant

	This position is **ONLY** open to students who have declared a major in this discipline.	M
	This project deals with social justice issues.	
	This project deals with sustainability (green) issues.	
X	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?

Yes

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)

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

Location of research/creative activities:

Environmental Sciences Research Lab, SW 2100

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

Human health is threatened by antibiotic-resistant bacteria and their related infections, which cause thousands of human deaths every year worldwide. Surface waters are vulnerable to human activities and natural processes that facilitate the emergence and spread of antibiotic-resistant bacteria in the environment. My lab studies antimicrobial resistance of bacterial isolates from local water bodies. Students in my lab use modern techniques to identify bacteria and test their resistance to antibiotics. We also measure water quality parameters such as biochemical oxygen demand, dissolved oxygen, alkalinity, hardness, pH, conductivity, and dissolved solids to determine water conditions that may affect aquatic life and public health in Edwardsville area. Our research findings will help public health officials and policy makers to prevent, reduce or eliminate human exposure to toxic substances and pathogens in the environment.

Brief description of student responsibilities?

The student will be responsible for the following:

1. Participate in water quality analysis
2. Prepare reagents for experiments
3. Perform microbial assays
4. Always follow lab safety protocols
5. Clean glassware, disinfect work area, and maintain analytical instruments
6. Document experimental procedures and results
7. Collect, manage, and analyze data
8. Write a report on research findings
9. Participate in lab meetings
10. Present research results to lab members or at conferences (optional)

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?

At the end of this experience, the student will be able to

1. Describe measurement techniques to identify microorganisms in the environment under aseptic conditions
2. Identify sources, effects, and control measures of pathogens in surface water.
3. Apply basic statistical methods to analyze chemical and microbial pollutants in water to

reduce human exposure.

4. Use tables and graphs to present environmental data and results.

5. Describe quality assurance and quality control methods to validate data and results.

6. Identify current and future research needs in water quality and public health

7. Describe how environmental scientists use chemistry and biology to protect public health and the environment

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:

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

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

Other requirements or notes to applicants: