Faculty Member Contact Information

Name	Dr. Joseph Kusi
Contact Info	
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Department	Environmental Sciences

1 Funded 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.	

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

- Only 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 hours

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

- No

Location of research/creative activities:

- SW 2100

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

Surface water designated for recreational activities are vulnerable to pathogen pollution which poses health risks to individuals in the urban communities. I am interested in analyzing water samples from lakes in the Edwardsville area to determine the presence pathogens of fecal origin. Microbial source tracking methods will be used to identify the sources (human, pets, and wild animals) of pathogens detected in the water samples. We use biochemical and PCR assays to identify pathogens in water samples and test their susceptibility to selected 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. Our research findings will advance both public health and the management of natural resources.

Brief description of student responsibilities?

1. Participate in water sampling and 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?

1. Describe sampling methods and measurement techniques to identify microorganisms in the environment under aseptic conditions
2. Identify sources, effects, and control measures of microbial pollutants.
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 biology and chemistry 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:

- No

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

- No

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

- No

Other requirements or notes to applicants:

- N/A