

Faculty Member Contact Information

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Description of the URCA Assistant Position

This posting includes one funded position. In addition, the faculty member may be willing to mentor additional, unfunded students.

How many unfunded students is this professor taking in addition to his/her one funded student? 0

(Students, if the faculty member will have both funded and unfunded students, he or she is free to select which student receives the funding. Funding cannot be split up between multiple students; only one student will receive it.)

Which of the following apply to this position?

- 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. 
- This project deals with human health and wellness issues. **+**

How many hours per week will your student(s) be required to work in this position? 9

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

Will it be possible for your student(s) to earn course credit? Yes No

If yes, in which course? CHEM 496 (or 396)

If yes, for how many credit hours? 2

Location of research/creative activities: SIUE Campus, Science Building

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

The student will investigate the analysis of cadmium in samples that mimic physiological conditions. A set of optimum conditions will be found by examining how the composition of physiological samples (salts, proteins, carbohydrates, etc.) affects the cadmium analysis. The goal of the study is to develop robust analysis methods for blood and urine testing that can be used on a portable instrument. The instrument that will be used is a portable atomic absorption spectrometer based on a tungsten filament (developed in my laboratory as alternative to the traditional graphite furnace). The motivation for the instrument is the much smaller size and resource demands of a small metal filament versus a graphite tube.

Brief description of student responsibilities:

The student will be responsible for conducting the experiments, including preparation of standard / sample solutions and analysis with the atomic absorption instrument. Analysis of the data quality and presentation of summarized results are also expected. Participation and creativity in the design of experiments is encouraged, but not required. The student will write a summary report at the end of the semester and participate in the writing of any peer-reviewed outcomes.

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?

The student will become proficient with analytical laboratory procedures for making quantitative standards and reference samples. They will become familiar with the fundamentals of atomic absorption spectrometry, the experimental methods used to improve data quality, and the statistical analysis of results. The student will gain experience with the high temperature chemistry of thermal atomization methods. Along with method-specific outcomes, the student will also gain experience in experimental design for the study of complex systems.

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:

N/A

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:

Must have passed CHEM 241 A/B.

Preference is given to students who have passed CHEM 331 & 335.

Other requirements or notes to applicants:

N/A