Faculty Member Contact Information

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Contact Info	
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Department	Electrical and Computer Engineering

1 Funded, 1 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.	
	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?

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)

6-8 hours

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

ECE 491 - Independent Study up to 3 credit hours.

Location of research/creative activities:

EB 3036, student can work on their own time.

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

This work is part of a larger research project. The scope of the URCA position will allow the student to be trained to achieve the following specific outcomes.

1. Develop a numerical model of a single-mode optical fiber in the COMSOL Multiphysics tool.

2. Simulate the transmission characteristics of the optical fiber.

3. Develop a numerical model for one of the following. Either (a) Side-by-side coupling of two optical fibers or (b) Poisson's ratio simulation using an optical fiber.

Brief description of student responsibilities?

The student will have the following deliverables.

1. Produce an accurate model of a single mode optical fiber.

2. Test the model by simulating the transmission behavior of light traveling through this fiber waveguide.

3. Create a model to simulate either application (a) or (b) as listed in the previous section.

4. Numerically simulate the results for application (a) for operation in air. Or simulate the results for application (b) in concrete or carbon-based composite material.

5. Submit a written report of the work conducted, modelling parameters used, and data obtained at the end of the URCA term.

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?

Student would have gained the following skills.

1. Training on a highly-sought after industry numerical modelling tool - COMSOL Multiphysics.

2. Ability to work independently and develop critical thinking.

3. Proficient technical writing to present scientific information in an easy to understand manner.

4. Hand-on training on optical equipment including fusion splicer, optical sources, optical spectrum analyzer, couplers, and several types of optical fiber cables.

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:

Work hours can be flexible. Weekly meeting time will be discussed and planned based on availability of the student and mentor. Student can set their own work hours, they will have access to the lab at all times.

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

The work will be performed on-campus.

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

Students with either a strong interest or background in Physics and chemistry will have an advantage. Students that have taken ECE 492-016 will also have an advantage.

Other requirements or notes to applicants:

Past experience in technical documentation will be beneficial but not required.