






**Faculty Member Contact Information**

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**1 Funded, Unfunded URCA Assistant**

<b>X</b>	This position is <b>ONLY</b> open to students who have declared a major in this discipline.	<b>M</b>
	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?**

- No

**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:**

- Engineering Building

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

Previous research has demonstrated a substantial enhancement in the strength of reinforced concrete (RC) frames through the utilization of external post-tensioning tendons. However, despite these advancements, a comprehensive design guide tailored to this strengthening method remains absent.

This project aims to address this gap by employing numerical modeling to investigate the influence of various design parameters pertinent to external post-tensioning for structural reinforcement.

A critical aspect of this endeavor involves subjecting the numerical model to rigorous validation against experimental data.

Accordingly, the primary objective of this research is to conduct a series of experiments on scaled post-tensioned frames. These experiments will furnish the requisite data essential for validating the accuracy and reliability of the numerical models.

**Brief description of student responsibilities?**

The student will collaborate with a graduate student in conducting an experimental study focused on the strength of reinforced concrete (RC) frames. Their collaboration will extend to jointly conducting data analysis and co-authoring a technical report that will comprehensively document the study's findings and results.

**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 experience, the student should have acquired the following key learning outcomes:

-Practical Experimental Skills: They should have gained hands-on experience in setting up and conducting experimental studies, particularly in the context of reinforced concrete.

-Data Analysis Proficiency: The student will develop strong data analysis skills, enabling them to process, interpret, and draw conclusions from the data collected during the experiments.

-Understanding of Strengthening Systems: He will have a comprehensive understanding of the concept of strengthening of RC structures, including their design, behavior, and factors influencing their performance.

-Collaborative Teamwork: Collaboration with the graduate student would have honed his teamwork and communication skills.

-Technical Report Writing: The experience should have improved his ability to communicate scientific findings effectively through technical writing.

-Problem-Solving and Critical Thinking: The student will enhance his problem-solving and critical thinking skills.

### **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?**

- No

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

- CE 240 and CE 242

**Other requirements or notes to applicants:**

- N/A