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**"The Precalculus Trigonometry Coordinator plans to incorporate four to six lab assignments into each section of MA 113 Precalculus Trigonometry"**

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## RCEU Proposal for Summer 2019

### **Faculty Mentor**

Ms. Shelley Lenahan, Lecturer and Precalculus Trigonometry Coordinator

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Ms. Lenahan previously directed an RCEU in Summer 2013.

### **Project Summary**

The Precalculus Trigonometry Coordinator plans to incorporate four to six computer lab assignments into each section of MA 113: Precalculus Trigonometry. Using technology, along with leading questions, will help students discover and understand concepts in Trigonometry that were previously only accessible to them by careful theoretical development and hand drawings. The course already has a recitation component where students revisit topics with a recitation instructor at a scheduled time outside of lecture, and this model was developed initially to enrich students' understanding of trigonometry in preparation for Calculus. During recitation, with the use of free software easily accessible to students, labs can additionally help students understand and retain critical trigonometry fundamentals. Because of the shortage of computer lab space and the numerous sections of Precalculus Trigonometry, it is more practical to create these labs so they can be done in a regular classroom on the students' laptops using free software such as Desmos, Geogebra or Wolfram Alpha. The student researcher will be responsible for creating new labs using such software and testing the labs for accuracy and ease of use. Additionally, the student researcher will be asked to create these labs so that they incorporate applications of Trigonometry in Physics, Engineering and Computer Science. Labs will be written as Google Docs for easy integration with Canvas.

### **Student Prerequisites**

The student researcher should be a math or computer science major who has completed the

Calculus sequence. Preference will be given to students who have taken Calculus at UAH with labs incorporated in the curriculum (within the last two to three years). The student is expected to have a 3.0 GPA or higher in his/her mathematics courses.

Women and Minority students are encouraged to apply.

### **Student Duties**

The student will 1) research current Precalculus lab assignments being used by universities across the country, 2) design assignments for Precalculus Trigonometry using Desmos, Geogebra and Wolfram Alpha, and 3) create interactive Google Docs that can be stored on the MA 113 Instructor shared drive. The student will work 32-40 hours per week for a 10-week period in the summer of 2019. At the end of the project, the student will host a demonstration for all Precalculus Trigonometry instructors.

### **Mentor Supervision and Interaction**

The student will meet with Ms. Lenahan (mentor) several hours during the first week for initial instructions and explanation of the goals of the project. After that, the student will meet with the mentor weekly to test 'labs' created by the student or show improvements made in existing labs. Once the labs are written and tested, the mentor will assist the student in preparing the presentation to all Precalculus Trigonometry instructors as mentioned above.