

1163-A5-1145

**Girija S Nair-Hart\***, [nairhaga@ucmail.uc.edu](mailto:nairhaga@ucmail.uc.edu), OH. *Fostering Increased Sense of Belonging in a Calculus Class through an Inter-disciplinary Project in the Context*. Preliminary report.

The purpose of this project was to provide students a more fulfilling experience in their Calculus 1 class through a hands-on project that highlights applications of Calculus in relatable real-life contexts. Biology, Physics, and Chemistry faculty participated in this project that examined blood flow in the smaller artery in arterial bifurcation. Based on a text book exercise, informed by Poiseuille's Law, the Navier-Stokes equations, and the concept of optimization, students examined the relationship among the angles and radii of bifurcating blood vessels. They calculated the branching angle of the smaller vessel that minimized friction along the branching path. In groups students constructed various models of vascular branching describing fluid flow through blood vessels and tested their best models. Students stated that this hands-on project helped them realize the importance of calculus and its connections to other disciplines in ways that they have never imagined before. They also felt a sense of belonging in the class and established a stronger connection with their peers. The presentation will detail the project, results of successful collaboration, and its impact on students' experiences. Insights gained for project modification will also be presented. (Received September 14, 2020)