

Abstract Submitted  
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**Hands-On Particle Image Velocimetry Experience for Bioengineering Students Using the Interactive Flowcoach System to Understand Aneurysm Hemodynamics** BREIGH N. ROSZELLE, Department of Biological and Health Systems Engineering, Arizona State University and Interactive Flow Studies Corporation, MURAT OKCAY, B. UYGAR OZTEKIN, Interactive Flow Studies Corporation, DAVID H. FRAKES, Department of Biological and Health Systems Engineering and School of Electrical, Computer, and Energy Engineering, Arizona State University — The Flowcoach system is a flow visualization and analysis platform from Interactive Flow Studies that uses particle image velocimetry (PIV) and computational fluid dynamics to provide interactive fluid dynamics education. In the spring of 2012, Flowcoach was used at Arizona State University to help teach bioengineering students about biofluid mechanics. A custom insert was made for Flowcoach to model an anatomical aneurysm that could be treated with a high-porosity flow diverting stent. Students performed PIV on the treated aneurysm model in small lab groups using Flowcoach and then wrote reports comparing their results to those from an untreated aneurysm model. The students were surveyed before and after the project and asked to rate their understanding of general biofluid mechanics, as well as experimental fluid mechanics and aneurysmal hemodynamics. Of the 76 students surveyed, 86% indicated an increase in their understanding of biofluid mechanics, and 90% indicated an increase in their understanding of both PIV and cerebral aneurysm hemodynamics. Students' written feedback showed that they felt Flowcoach and the interactive learning experience it provided were both interesting and beneficial to their future careers as engineers.

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