

Presentation for the Symposium on BEER

October 2019

Multidisciplinary Education and Research in Biomathematics for Solving Global Challenges

Padmanabhan Seshaiyer

Department of Mathematical Sciences, George Mason University, Fairfax, VA 22030

pseshaiy@gmu.edu

In this talk, we describe the role of multidisciplinary educational and research experiences combined with a competency based training to help prepare the next generation STEM workforce in solving global challenges. In particular, the talk will engage and expose the audience on research based content specific themes in biomathematics including mathematical modeling, stability analysis, parameter estimation techniques, physics-informed deep learning algorithms and statistical inference techniques along with the exposure to educational based competency specific themes including 21st century skills (critical thinking, creativity, communication and collaboration) and active learning approaches (inquiry-based, experiential-based and project-based approaches) inside and outside the classrooms. These content and competency based training helps students and faculty to not only become change agents in multidisciplinary research and education but also allows them to serve as catalysts to help reinforce and drive reform across an institution. The role of institution and faculty in helping transform student experiences will also be described and specific examples of mathematics projects with applications to biological and bio-inspired systems will be discussed that has had cascading effects on student learning both locally and internationally.