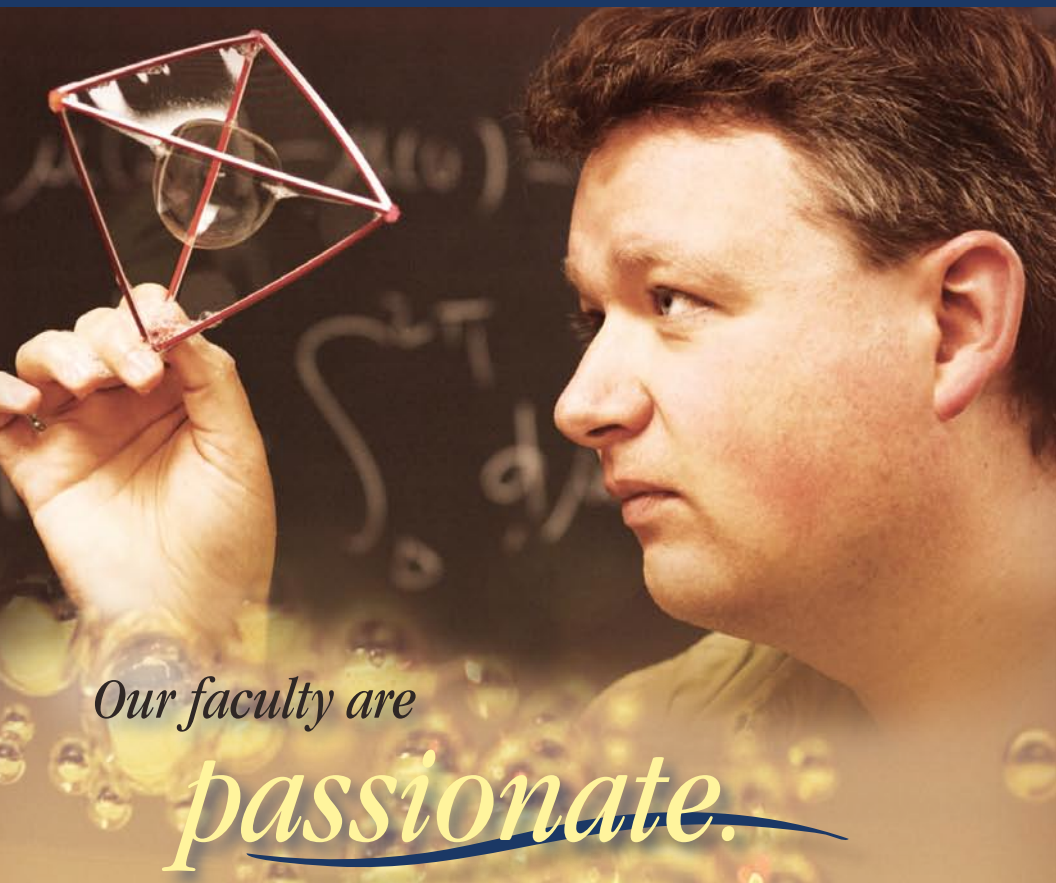
Adam N. Coffman

Associate Professor of Mathematics



Our faculty are passionate.

The search for knowledge isn't just about finding answers. Sometimes it's about the quest. At IPFW, our faculty are passionate about that.

Take Adam Coffman, for example. Coffman, an associate professor of mathematics, has always had the urge to study geometry. In fact, it's something he can't keep off his mind. "Geometry is all around you all the time, whether you are driving, walking, or sitting in a chair," he says. "There are always problems to solve. In fact, there was one problem that I was stuck on for 10 years."

The likelihood of getting stuck hasn't kept Coffman from taking on difficult questions. If anything, it's given him more drive, and that's a major reason he's passionate about research: "I work on hard questions, and I try a lot of different methods to solve them. If they don't work, they go in a big recycling bin. So being stuck is not so bad."

Thanks to that "recycling bin," Coffman has been a prolific intellectual resource for the field of mathematics. He's published more than a dozen scholarly papers, presented at numerous academic conferences, and received the Pippert Science Research Scholar award at IPFW this past year. Coffman is currently researching the geometry of four-dimensional objects, a project he focused on during a recent semester on sabbatical. His interest is in geometric properties of real objects inside complex objects. He also studies abstract algebra and physics and often uses the computer for symbolic manipulation and graphics.

Coffman is widely known for his work on Steiner surfaces, which he describes as a two-dimensional object that sits in a three-dimensional space. A soap bubble is one example of the thin exterior of a sphere, he says, and these surfaces are used in modeling the metal parts of a car. They're also used in computer graphics where you can only see the exterior of an object. "Think of a movie like *Shrek.* They have computer animation of people and objects. Those are modeled using the Steiner surface as an example."

Coffman's ability to translate math into everyday life also makes him a compelling teacher. Along with his regularly scheduled algebra and geometry courses at IPFW, Coffman has given bubble demonstrations to kids at Science Central and local schools. Using straws and soap film, he creates three-dimensional, geometric objects. Kids love it, he says, and it's a great way to keep them interested in math.

Coffman has also given workshops to high school teachers, with funding from the National Science Foundation, to help energize math and science curricula. It's important

to keep kids interested in these subjects during the high school years, he says, "because if you don't follow a technical, mathematical, science curriculum in high school, that closes doors for you. If you just stick it out through high school, you'll have the opportunity to pursue all sorts of things if you want to."

Opening doors, after all, is what Coffman's work is all about. It's about pursuing the question. Creating new knowledge. And, as Coffman puts it, "pushing back the boundaries of what we don't know."

Education Ph.D. and M.S. in mathematics from the University of Chicago; B.S. in mathematics, with high honors and distinction, from the University of Michigan–Ann Arbor.

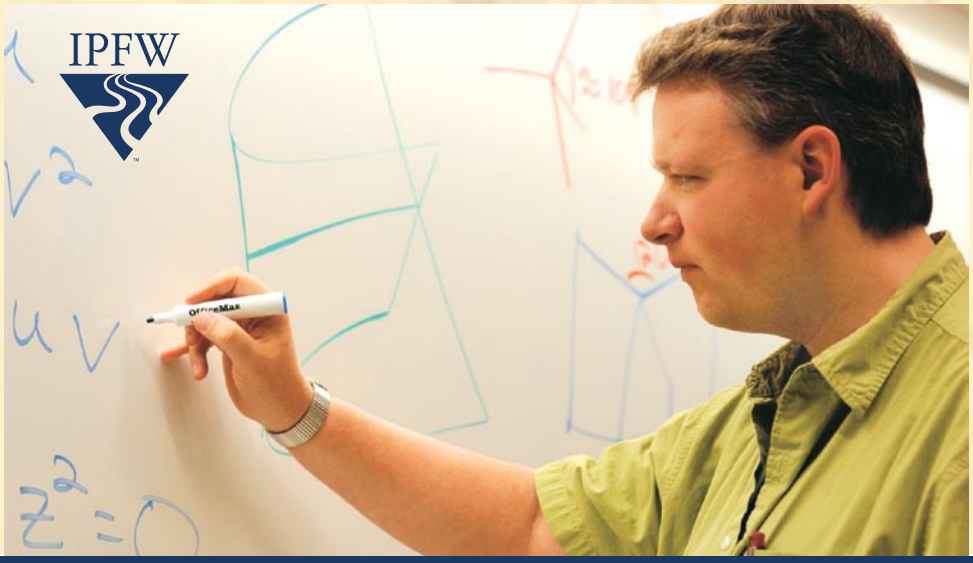
Teaching Experience University of Chicago, Indiana University–Purdue University Fort Wayne. Subjects taught include discrete mathematics, multivariate calculus, single-variable calculus, linear algebra, complex analysis, abstract algebra, geometry, elementary topology.

Research Experience University of Chicago, Indiana University–Purdue University Fort Wayne. Interests include geometric analysis, real submanifolds of complex manifolds, real and complex algebraic geometry.

Publications & Presentations Published in various journals including *Pacific Journal of Mathematics, Advances in Geometry, Real Analysis Exchange, The Pi Mu Epsilon Journal, Linear Algebra and Its Applications, Beiträge zur Algebra und Geometrie, Houston Journal of Mathematics, The College Mathematics Journal, Computer Aided Geometric Design.* Presented at American Mathematical Society meetings; Mathematical Association of America meetings; seminars and conferences at St. Louis University, University of Chicago, University of Michigan, University of Wisconsin–Madison, University of Western Ontario, Michigan State University, University of Illinois–Urbana-Champaign, Eastern Illinois University; Midwest Several Complex Variables Conference; Mathematical Pictures Conference; Lehigh University Geometry and Topology Conference.

Grants & Awards Grants from the Purdue Research Foundation to study the geometry of singularities, from IPFW to study "Generalizing stereographic projection," from IPFW to study "Hermitian symmetry in geometry." Received Pippert Science Research Scholar award at IPFW.

Community Involvement Co-organizer of Physics-based Calculus, a National Science Foundation–funded workshop for high school teachers; has presented bubble demonstrations at science camps, college math clubs, for IPFW alumni, and at Science Central in Fort Wayne.



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