

You are cordially invited to attend the
MSU Mathematics Education Colloquium



Presented by:
Professor Kyeong Hah Roh
Arizona State University

Thursday, October 18, 2018
2:30 – 4:00 p.m.

252 Erickson Hall
MSU

On the Teaching and Learning of Logic in Mathematical Contents

Logical thinking plays a crucial role in generating valid arguments from the given information as well as in evaluating the validity of others' arguments in workplaces. Training our students as logical thinkers has been a central component in mathematics education. By engaging in proving and validating activities in undergraduate mathematics, students are expected to enhance logical thinking and make sound decisions by deducing valid inferences from a tremendous amount of information and resources in their future workplaces. Many universities in the United States thus offer introductory proof courses, or so called transition-to-proof courses, to introduce logic and various proof structures for valid arguments in mathematical contents. This presentation will provide an overview of the empirical studies that I have been involved in relation to undergraduate students' logic and logical thinking, instructional interventions that I have designed to enhance students' logical thinking in mathematical contents, and some issues and challenges in the introductory proof courses in mathematics

Dr. Kyeong Hah Roh is currently an Associate Professor in the School of Mathematical and Statistical Sciences at Arizona State University. She holds a PhD in mathematics in the area of differential geometry from Seoul National University and a PhD in Mathematics Education for The Ohio State University. Her primary research interest is in undergraduate students' cognitive development in advanced mathematics with attention to mathematical logic and argumentation. She has developed curricular materials and instructional interventions for proof-oriented undergraduate mathematics courses such as advanced calculus, geometry, and mathematical proofs. She has conducted teaching experiments to implement these educational innovations for student-centered, inquiry-based, learning. Her research aims not only to help undergraduate students have deeper understanding of mathematics and mathematical practice but also to help mathematics teachers support their students' learning of advanced mathematics topics and mathematical representations. She has published in a variety of journals such as *Educational Studies in Mathematics*, *PRIMUS*, *Advances in Computational Mathematics* about these issues.