Career & College Panelists

Clarissa Chavez - **Auburn University Montgomery**
Associate Professor, Department of Psychology
Amanda Hayes - **SABIC Innovative Plastics**
Chemical Engineer
Katie Lassiter - **Walmart Pharmacy**
Pharmacist
Alyssa Barnett   - **Auburn University Montgomery**
Student – Senior Mathematics Major

Workshop Leaders

Dr. Mosisa Aga - Associate Professor, Dept. of Mathematics & Computer Science, AUM

Dr. Joe Albree - Assistant Professor (Retired)

Dr. Scott Brown - Associate Professor, Dept. of Mathematics & Computer Science, AUM

Ms. Marty Dougherty - Lecturer, Dept. of Mathematics & Computer Science, AUM

Dr. Rhodes Peele - Associate Professor, Dept. of Mathematics & Computer Science, AUM

Dr. Luke Smith - Assistant Professor, Department of Curriculum Instruction and Technology, AUM

Dr. Yi Wang - Professor, Dept. of Mathematics & Computer Science, AUM

Technical Coordinator

Dr. Luis Cueva-Parra, Associate Professor and Associate Department Head, Dept. of Mathematics & Computer Science, AUM

Additional Help Provided by

Debra Mangus, Administrative Assistant and **The Math Club**, Department. of Mathematics & Computer Science, AUM

History of Sonia Kovalevsky Day at AUM

AUM's **Sonia Kovalevsky (SK) Day** is a one day program for young women who are enrolled in Algebra I or higher. The Department of Mathematics & Computer Science here at AUM hosted its first SK Day back in February 2004. Since that time, AUM has hosted a total of eight SK Day events. Similar events have been presented across the country with partial funding through grants from the Association for Women in Mathematics (AWM), the National Security Agency (NSA), and various universities. This program has always been strongly supported by AUM administration and has opened up opportunities for young women by having them actively learn about various mathematics topics, hear from a respected female mathematician, and learn about numerous math related careers through a career panel. Sonia Kovalevsky is credited as the first female to be awarded a doctorate in mathematics.

Program Organizers

Scott Brown
Marty Dougherty
Jerome Goddard II
Enoch Lee
Rachel Paulk

Sponsored By

AUM Department of Mathematics & Computer Science
AUM Provost's Office
AUM University Outreach
AUM Office of Enrollment & Admissions

AUM

SEPTEMBER 26, 2015
SONIA KOVALEVSKY
MATHEMATICS DAY

"..Many who have never had the occasion to discover more about mathematics confuse it with arithmetic and consider it a dry and arid science. In reality however, it is a science which demands the greatest imagination."
~Sonia Kovalevsky

Workshops

Session 1

Ms. Marty Dougherty: *Be a Tesselmaniac,* M.C. Escher created beautiful works of art using tessellations. We will briefly learn about his work and will explore how a tessellation is made. Then you will get the opportunity to make your own tessellations using a fun software program.

Mr. Joe Albree: *Biography of Sonia Kovalevsky*

Dr. Luke Smith: *Is This Game Fair?* A lot of people want your money. They even make up games that are supposed to help you make money. So, how do you know – before you play the game – if the fame is truly a fair game? Come find out, and be prepared to play a few games yourself.

Session 2

Ms. Marty Dougherty: *Be a Tesselmaniac,* See above

Dr. Scott Brown: *Making Platonic Solids with Polydrons,* Using regular triangles, squares, and pentagons we will create the five Platonic solids.

Dr. Rhodes Peele: *Probability and Poker,* We will show how to calculate the probability of getting various kinds of hands (flushes, full houses, straights, etc.) on the deal in the game of draw poker. After developing and applying the relevant mathematics, we will see how accurate our answers are in practice by conducting a hands-on probability experiment.

Session 3

Dr. Yi Wang: *Investment and Betting,* In this workshop, we will discuss how Kelly's Criterion is at work when making a long-term investment strategy or a betting strategy.

Ms. Marty Dougherty: *Math and Games,* Math and many games are highly related. In this workshop, you will have the chance to play games that relate to math topics such as set theory, logic, deduction, ordering, mazes, etc. If you love games, this is the workshop for you.

Dr. Mosisa Aga: *Alphametic Puzzles,* An alphametic puzzle (also some- times known as a cryptarithm) is a type of puzzle where words are put together into an arithmetic formula such that digits can be substituted for the letters to make the formula true. In this presentation we will first introduce the definition and the Guiding Rules of the puzzle and then have fun with some (selected) easier such puzzles.

SCHEDULE

ALL EVENTS WILL BE HELD IN GOODWYN HALL

Time:	Description:	Location:
8:00am - 8:55am	**Registration & Refreshments**	**Lobby**
9:00 am - 9:15am	**Welcome & Introductions**	**109**
9:15am - 10:15am	**Keynote Address:** Dr. Kristen Abernathy *Going the Distance*	**109**
10:25am - 11:15am	**Parallel Workshop Session #1**	**Various (see ticket)**
11:15am - 12:10pm	**Lunch**	**Lobby**
12:10pm - 1:00pm	**Parallel Workshop Session #2**	**Various (see ticket)**
1:10pm - 2:00pm	**Parallel Workshop Session #3**	**Various (see ticket)**
2:10pm - 3:10pm	**Career Panel Discussion**	**109**
3:10pm - 3:30pm	**Closing Remarks & Evaluations**	**109**

Key Note Speaker
Dr. Kristen Abernathy

Assistant Professor of Mathematics
Department of Mathematics
Winthrop University

Dr. Kristen Abernathy received her Ph.D. in mathematics from North Carolina State University in 2011. Upon graduate school completion, she started as an assistant professor of mathematics at Winthrop University. She is faculty advisor for the undergraduate math club and an active proponent of undergraduate research.

Over the past five years, she has worked on fourteen research projects with undergraduates, majorly in the area of cancer models. She also enjoys outreach work, participating in NC State's and Winthrop's Sonia Kovalevsky Days and volunteering with regional Math Counts teams.

Dr. Abernathy's husband is also an assistant professor of mathematics at Winthrop. They have two boys, a dog, and a cat. As a family, they enjoy video games (particularly RPGs), basketball, running, and variety puzzles.

Going the distance

In this presentation, we will explore the commonly used distance formula in the xy-plane. We will begin by deriving this formula, so no prior knowledge of the distance formula is needed. Using this distance formula, we'll motivate conic sections and explore the connection between shapes such as circles and distance. After we have analyzed this distance formula, we'll change how we think about distance and examine how these changes affect the shapes we explored earlier.