

## High School Workshops Fall 2001

During the Fall semester 2001, we held three workshops for high school students. The topic for two of the workshops was Knot Theory and the topic for the third workshop was Cryptography.

The first Knot Theory workshop was given for students at Presidio High School, a Charter school on Fort Lowell. We traveled to the school and gave the workshop on their campus. The teacher contact was Jennifer Lowe. The workshop was broken up over a two day period, November 13th and 15th, from 1-3pm. The graduate students involved in this workshop were Jeanine Smallwood, Adam Spiegler, Katrina Jiménez, and Jenn Smith.

The following topics were covered:

- Introduction (Jeanine)
- Mobius Strips (Katrina)
- Projections of knots (Katrina)
- Reidemeister Moves (Katrina)
- The 3-colorable test (Adam)
- Knots made from rigid sticks (Katrina)

Some text references that we used were:

- The Knot Book - Colin Adams
- Books loaned to us by Dr. Alain Goriely, office Math 717.

The second Knot Theory workshop was held on December 7th for students from Douglas High School, in Douglas Arizona. The students arrived to the U of A campus around 10:30am and the workshop lasted until about 3:30pm, with a 45 minute lunch break. The teacher contact was Denise Kroll. The graduate students involved with this workshop were Jeanine Smallwood, Adam Spiegler, Lisa Berger, Patrick Shipman, Ben VanDerLinden, Katrina Jiménez, and Jenn Smith. We also had an undergraduate mathematics major come to speak with the students for half an hour about what she has done as a mathematics major and to answer a few questions the students had. The undergraduate who spoke with them was Catherine Ott.

The topics covered during the workshop were:

- Introduction (Jeanine)

Projections of Knots (Katrina)  
The 3-colorable test (Adam)  
Reidemeister moves (Katrina)  
Polynomials (Patrick)  
Applications of Knot Theory (Ben)

The text references used were the same as above. Handouts and overheads for this workshop are currently being stored in a filing cabinet in Math 318 (Katrina's office).

The cryptography workshop took place on November 29th from 8-2pm. About 25-30 students from Pusch Ridge Christian Academy came. This school is a private school and is located within the boundaries of the Amphi district. The teacher contact was Laura Kondok. Many of the students who participated were juniors and seniors, but three of them were freshmen.

I am unaware of the topics which were covered or the final group of graduate students who helped with this workshop, but the following people had sent me an e-mail showing interest: Sarah Frey, Todd Cadwallader, Adam Spiegler, Erin McNicholas, Dmitry Kondrashov, David Marsden, Fredrick Leitner, Alejandra Alvarado, and Andre Lehovich.

I am told that David Marsden, Jenn Smith, Andre Lahovich, and Fredrick Leitner ran sections of the workshop. Erin McNicholas has recently expressed interest in designing another cryptography workshop in the future.