2005 Kieval Lecture Series Talks
Featuring
Millie Johnson
from
Western Washington University

Thursday, April 28th, 2005, 11:00 am in Meese Meeting Room – Library 305
"Skateboards, Clocks, Trains, Bicycles, Bernoulli, Galileo, Pascal, and More…"

In re-creating experiments from the past, we can discover many remarkable properties of a special family of curves. These curves have influenced the design of clocks, gears, bicycles, and even skateboard ramps. Many famous mathematicians of the past have explored characteristics of these curves due to a contest problem posed in a journal. The solution to the problem sparked a family feud, but also resulted in the development of a new branch of mathematics.

Friday, April 29th, 2005, 9:00 am in Meese Meeting Room – Library 305
"The Mathematics of Meanders: Rivers, Channelization, Floods, and the Environment"

What makes a river meander? Is a straight channel more efficient? How is the environment affected by our attempts to control waterways? We will use the properties of Mother Nature (including random walks and curvature) to determine a class of functions that generates real river shapes. These functions experienced a renewal of interest due to their use in Andrew Wiles' proof of Fermat's Theorem. Understanding the mathematics of the special curves in nature gives us the key to unlock some of the mysteries of our surroundings.

Friday, April 29th, 2005, 3:00 pm in Science 118
"Using Mathematics to Understand What Bees are Buzzing About"

Honey Bees have a remarkable system of sending and receiving signals that allows them to recall colors, shapes, odors, and to navigate with precision. How do the bees communicate and perhaps of more interest, can humans and bees converse?

Millie Johnson is an Associate Professor of Mathematics at Western Washington University in Bellingham, WA, and has consulted on a wide range of mathematical applications including DNA testing, minimal surfaces, septic tank design, and river flow management. After 32 years of teaching, her main focus if to help students make sense of mathematics.