Speaker: Aiden A Bruen, *University of Calgary*

Title: *Geometry from ancient Greece to modern Italy and a fundamental problem in error-correcting codes.*

Date: Thursday, January 22, 2004

Time: 1:40 – 2:55 pm   Room: B650

Abstract:
The basic theorems of incidence geometry are described, as well as results of Menelaus and Ceva. Methods of algebraic geometry by B. Segre are used to generalize the Ceva-Menelaus results emphasizing the case of finite fields. The Hasse-Weil theorem is then invoked to establish Segre's celebrated combinatorial characterization of conics and cubics. The connection with M.D.S. codes is described. Examples include the Reed-Solomon codes which are one of the main classes of error-correcting codes used in industry. The lecture will conclude with a brief discussion of related results due to the speaker and his co-authors.

Brief Biography:
Professor Bruen read mathematics for his B.Sc and M.Sc in Dublin, Ireland and took his PhD at Toronto in finite geometries under the supervision of F.A. Sherk. He has held positions at the University of Western Ontario, the University of Vermont, and the Los Alamos National Laboratory, in addition to several visiting appointments in Europe and in the U.S. Areas of mathematical interest include geometry and group theory, algebraic geometry, block designs, error-correcting codes, information theory and cryptography. He is also a consultant in the area of information security.

**Refreshments will be served before the talk**