

THE MATHEMATICS DEPARTMENT PRESENTS

A MATHEMATICS COLLOQUIUM

THURSDAY, November 20, 2008

BOND HALL 217

4:00 pm

Title: **The Lax-Milgram Theorem and Its Applications**

Speaker: **Brian Thompson**, Western Washington University

Abstract:

The Lax-Milgram theorem states that if a bilinear form on a real Hilbert space is *continuous* and *coercive*, then one can use it to represent any functional in the dual space. We will see how this seemingly simple extension of the Riesz representation theorem can be used to show the existence of *weak* solutions to the Dirichlet and Neumann problems for some elliptic partial differential equations. In closing, I hope to get to some of the applications of this theorem in modern physics. This talk will be accessible to those with a basic understanding of analysis.

Refreshments will precede the talk at 3:30pm in Bond Hall 300
courtesy of Dr. David Hartenstine