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**Speaker:** Chris Porter  
University of Notre Dame

Monday, October 4, 2010  
4:15 PM  
231 Hayes-Healy Hall

**Title:** Extracting Randomness from the Tosses of a Biased Coin

**Abstract:**

Given a biased coin (one for which the probability of heads is strictly between 0 and  $1/2$ ), can we use it to simulate a fair coin? In this talk, I will consider von Neumann's simple yet elegant solution to this problem, as well as generalizations of this solution. I'll also look at generalizations of the problem, such as the case in which we try to simulate a fair coin using a sequence of biased coins. As I'll show, we can solve these generalized versions of the problem using techniques from computability theory and effective randomness. No background in these areas will be presupposed.