

CALIFORNIA STATE UNIVERSITY, LONG BEACH

THE MATHEMATICS COLLOQUIUM

presents

Dr. Gary Lieberman

Iowa State University

speaking on

The Capillary Problem

Friday, February 11, 2005

12:00PM-1:00PM

LA5-267

Abstract: Capillarity phenomena arise in many physical situations, such as water drops on a leaf or the rising of a fluid up a tube. Scientific study of these phenomena can be traced back to Leonardo da Vinci although the first useful theory was developed by Young and Laplace in the early nineteenth century. The theory was expanded considerably in the last half of the twentieth century and continues to be an active area of research. This talk will focus on the mathematical theory in the special case of fluid rising up a tube. The surface of this fluid can be described as the graph of a simple partial differential equation, and an elementary analysis of the shape of this surface will be presented, using ideas from advanced calculus. Some connections to geometry will also be discussed.