CNAS Public Lecture Series – Fall 2014

September 16, 2014 7:30 PM – 8:30 PM **TEMPLE 002**

NUMERICAL METHODS, DYNAMICAL SYSTEMS, AND APPLICATIONS

Speaker: Jorge Rebaza, Professor, Department of Mathematics

Some problems in fields including physics, biology, chemistry, physiology, and engineering, can be studied by first representing the interaction between variables and parameters of the problem in a mathematical form. Such a mathematical model of a real-world problem is often subject to simplifications to allow for mathematical theory and methods to be applied. Theoretical results are followed by solutions to the mathematical problem, as well as by possible extensions and generalizations of results. Within the process of solving the mathematical problem itself, some numerical methods and algorithms become a crucial part of the solution process. In this presentation we talk about one branch of applied mathematics: dealing with some problems that can be mathematically represented as differential equations or dynamical systems; we explain how certain mathematical tools, numerical techniques, and algorithms are used to solve such mathematical problems, and how the original models could be extended and generalized.

October 7, 2014 7:30 PM – 8:30 PM **TEMPLE 002**

A REVIEW OF MAJOR ENVIRONMENTALLY-BASED LAWSUITS IN THE UNITED STATES FROM 2004 – PRESENT: ONE MEASURE OF CORPORATE SOCIAL RESPONSIBILITY

Speaker: Melissa Dallas, Professor, Department of Hospitality and Restaurant Administration

This relevant and lively presentation will provide an overview of major lawsuits settled or decided during the past decade in which the well-being of an environmental asset was in dispute. The environmental assets were compromised due to a variety of causes including greenhouse gas emissions, chemical leaks, waste disposal, air pollution, and wetlands development. The outcomes of these suits are one indication of the lack of adoption of, and adherence to, sound corporate responsibility practices as first discussed in a seminal paper by Archie Carroll in 1991.

November 11, 2014 7:30 PM – 8:30 PM **TEMPLE 002**

NANOBIOCHEMISTRY: NANOPARTICLES FOR BIOLOGICAL APPLICATIONS

Speaker: Katye Fichter, Assistant Professor, Department of Chemistry

Nanoscience is a burgeoning field that overlaps with many of the physical and natural sciences. Research in nanoscience has provided us many different types of new nanoscale materials that have found very promising applications in biological and biomedical circumstances. For example, cationic polymers and lipids can self---assemble with nucleic acids to form nano--to micro--sized “polyplexes”, which have been used for nucleic acid therapies (e.g. gene therapy). In addition, many inorganic nanoparticles and nanocrystals can be functionalized to interact with biological systems. Gold nanoparticles can be observed via both light and electron microscopy. Semiconductor quantum dot nanoparticles are intensely fluorescent, allowing researchers to observe single biomolecules in living systems. As a further enhancement, doping inorganic nanoparticles with MRI---active elements, such as Gadolinium, allows multi--modal imaging in light microscopy, electron microscopy, and magnetic resonance imaging. This lecture will investigate some ways nanoparticles are being used in biological and biomedical applications.

PARKING WILL BE AVAILABLE IN LOT 4, SOUTH OF TEMPLE HALL