

# M \* A \* T \* H

## COLLOQUIUM

The Mathematics Department of Sonoma State University  
presents a series of informal talks open to the public

Wednesdays at 4:00 pm

Darwin Hall Room 108

Coffee at 3:45 pm

**SEPTEMBER 8 MUSICAL APPLICATION OF THE FIBONACCI SUMMATION SERIES**

Don Walker, Archivist, University of the Pacific, will present a summary of such applications by well-known and unknown 20th century composers. He will include a critical evaluation of results achieved and a discussion of potential for further creative applications. The presentation will include brief sound excerpts.

**SEPTEMBER 15 PROJECTIONS BODIES: AN OUTSTANDING CONJECTURE**

Sam Brannen, Mathematics, Sonoma State University, will discuss one of the outstanding problems in the field of affine isoperimetric inequalities, Petty's conjecture concerning the relationship of the volume of a convex body to that of its projection body. He will describe projection bodies and Petty's conjecture and then present the known partial results which appear to confirm the conjecture.

**SEPTEMBER 22 THE POWER OF SYNERGY: USING SURVIVAL ANALYSIS FOR BUSINESS FORECASTING**

Ai-Chu Wu, Mathematics, Sonoma State University, will describe the survival analysis approach and show that this method is significantly better than the current method, capacity planning. Capacity planning is based on accurately forecasting the timing and dollar volume of orders and relies on individual project managers to predict the probability of success for each deal, which consistently overestimates actual results.

**SEPTEMBER 29 AN INTRODUCTION TO FUZZY LOGIC**

Benjoe Juliano, Computer Science, CSU-Chico, will showcase some fundamentals of fuzzy logic and fuzzy set theory. Dr. Juliano will discuss background information and a brief historical survey. An overview of some applications will be presented, focusing on the area of fuzzy control.

**OCTOBER 6 COMPUTATIONAL FIELD SIMULATION**

Jeffrey Housman, Mathematics Undergraduate, Sonoma State University will discuss the relatively new and innovative third branch in scientific discovery, Computational Field Simulation (CFS). The talk will include a brief history, some work done at the ERC at Mississippi State, and a look into the future.

**OCTOBER 13 BERTRAND'S PARADOX**

Elaine McDonald, Mathematics, Sonoma State University, will investigate Joseph Bertrand's 1889 simple probability question which has many seemingly reasonable answers! The root of the paradox lies in defining what is meant by choosing something at random. We will explore various solutions given by mathematicians over the century.

**OCTOBER 20 THE PROPORTION OF THE GOLDEN MEAN IN THE PENTAGRAM**

Steve Wilson, Mathematics, Sonoma State University, will see how the proportion of the golden mean arises in nature, is used in architecture, and will explain how it appears in the pentagram and other geometric figures.

**OCTOBER 27 STATISTICAL PROCESS CONTROL**

Susan Herring, Mathematics, Sonoma State University, will discuss quality control, statistical process control, total quality management and just-in-time management. A brief history of quality control will be presented, as well as a discussion of how quality control can be applied to fields as diverse as manufacturing and teaching. This talk is appropriate for all audiences.

**NOVEMBER 3 AN INTRODUCTION TO CONTINUOUS MODELS**

Sunil Tiwari, Mathematics, Sonoma State University, will discuss the topic of ordinary differential equation models, their formulation, analysis, and interpretation. He will analyze how appropriate assumptions simplify the problem, how important variables are identified, and how differential equations are tailored to describing the essential features of a continuous process. Examples of continuous processes: bacterial growth in a chemostat, delivery of drugs by continuous infusion, glucose-insulin kinetics, compartmental analysis, simple harmonic motion, etc., will be used.

**NOVEMBER 10 POLYHEDRAL POTPOURRI**

Jeff Hrdlicka, MathMagician, Starmast Productions, ruminates on 3-dimensional models, including the 4-dimensional analog of a dual-pair star tetrahedron and the 5-dimensional extensions of the tetrahedron and the cube. Other topics will include polyhedra with non-planar faces, infinite polyhedra, and the extension of the Hamiltonian path on a polyhedron into higher dimensions.

**NOVEMBER 17 THE CLINICAL TRIAL METHOD**

Rodney Wong, Statistics, UC Davis, will present an analysis of the controlled, double blind, prospective, randomized clinical trial, which has become the scientific standard for the approval of new drugs in this country. He will discuss the history of the clinical trial method and the ethical and statistical issues raised in a clinical trial of AIDS patients for which he was the study statistician.

**DECEMBER 1 JUST IN TIME FOR THE MILLENNIUM...OR ARE WE?**

Edith Mendez, Mathematics, Sonoma State University, asks why should we celebrate a new millennium just because a sixth century monk set up our calendar that way? Why keep time at all? How have people kept time over the years and days and minutes and...?



**SONOMA STATE UNIVERSITY**

Parking permits (1.50) are required Monday through Thursday 6 am to 10 pm.  
No public parking is permitted in reserved spaces at any time.