

# Archived Seminars

## 2015/16

May 06 2016; 1:00 PM in PB 138 : Adnan Sabuwala Ph.D. (CSU Fresno)

**Title:** *Pi: A billiards balls problem*

**Abstract:** In this talk, we will present a billiards ball problem that undergraduate students worked on with me this semester. It's surprising connection to the mathematical constant  $\pi$  will be shown. We will answer many other related questions and pose some open problems as well.

Apr 22 2016; 12:00 PM in PB 138 : Tamas Forgacs Ph.D. (CSU Fresno)

**Title:** *Recent Progress in the Classification of Polynomially Interpolated Legendre Multiplier Sequences*

**Abstract:** This talk will focus on some recent progress in the classification of polynomially interpolated Legendre multiplier sequences. The results answer heretofore open questions in the field, some of which were posed by undergraduate student researchers at Fresno State. We will also explore the power and the limitations of our methods, especially regarding their usability in the classification of all functions which interpolate Legendre multiplier sequences.

Apr 08 2016; 12:00 PM in PB 136 : Lance Burger Ph.D. (CSU Fresno)

**Title:** *A Deeper Look at a Related Rate Activity*

**Abstract:** Click [here](#).

Mar 11 2016; 12:00 PM in PB 138: Jenna Tague Ph.D. (CSU Fresno)

**Title:** *Students' Conceptions of Rate of Change*

**Abstract:** Click [here](#).

Feb 26, 2016; 12:00 PM in PB 138: Khang Tran Ph.D. (CSU Fresno)

**Title:** *Zero Distribution of Sequences of Polynomials*

**Abstract:** Click [here](#).

Feb 12, 2016; 12:00 PM in PB 138: Agnes Tuska Ph.D. (CSU Fresno)

**Title:** *George Polya's work at Stanford University - What can we learn from his legacy?*

Jan 29, 2016; 12:00pm in PB 138: Oscar Vega Ph.D. (CSU Fresno)

**Title:** *Generalized quadrangles and their well-covered dimension.*

**Abstract:** Click [here](#).

**Jan 22, 2016; 12:00pm in PB 138: Diana Herrington (CSU Fresno)**

**Title:** *The Many Faces of Assessment.*

**Abstract:** Assessments come in many different formats. This presentation will look at a variety of assessments and their purposes, along with different ways to score them. The Common Core State Standards test sample problems will be shared and discussed, all incoming students will have been exposed to these tests since they are national. Standardized tests for college entrance are changing to reflect the state adopted Common Core Standards, the new SAT begins in March of this year. Sample problems with solutions and scoring of this will also be shared.

How do you decide on what to assess?

How do you create a valid selected response test (this is the old multiple choice test) and test bank?

Portfolio assessments will be looked at, with a discussion of their strengths and weaknesses.

Sharing ideas on projects for assessing, and how to keep the focus on the math.

A look at assessing with multiple formats and technology.

We will also look at different ideas currently being used in lowering testing anxiety.

**Dec 04, 2015; 10:00am in PB 138: Ke Wu (CSU Fresno)**

**Title:** *Survival Analysis*

**Abstract:** Survival analysis is generally defined as a set of methods for analyzing data where the outcome variable is the time until the occurrence of an event of interest. The event can be death, occurrence of a disease, marriage, divorce, etc. The time to event or survival time can be measured in days, weeks, years, etc. Observations are called censored when the information about their survival time is incomplete. In survival studies it is typical the data are censored. In this talk we will discuss the nature of survival data, and the commonly used techniques in analyzing survival data including the parametric models and non-parametric methods. We will also discuss different models for censored data including the general right censoring model, Koziol-Green model, and partial Koziol-Green model. One problem in clinical trials is to study the difference of the effects of two treatments, which is leading to the two-sample problem. In particular, in a two-sample scale problem a specific treatment extends the life of the subject, in the sense that the lifetime is multiplied by a scale parameter. We will discuss the estimators of the scale parameter when the data are under different censoring models, and the large-sample asymptotic distributions of the estimators.

Nov 06, 2015; 10:00am in PB 192: Tamas Forgacs, Ph.D. (CSU Fresno)

**Title:** *Undergraduate Research- five Ws*

**Abstract:** The idea of involving undergraduates in mathematics research is not new. The pioneering programs started some 40 years ago, and the enterprise has grown to a national scale since. As the federal funding gets tight, the survival of the initiative depends increasingly its constituents understanding its importance, benefits and costs. Who participates in undergraduate research projects? What does it mean to do undergraduate research? Why should you participate? When and where does such a thing take place? We will discuss several existing programs (such as the Fresno State Math REU) in detail, and will give compelling reasons for both students and faculty to get involved with undergraduate research.

Oct 23, 2015; 10:00am in PB 138: Kay Kelm (Fresno State)

**Title:** *Teaching Math 111 (or, Care and Feeding of Math Majors)*

**Abstract:** In this talk I present a summary of my efforts to improve the learning outcomes of students in Math 111 (Transition to Advanced Mathematics) using a flipped classroom, daily reflections, and group homework. I explain how I have used principles of active learning, metacognition, and team-building to improve student understanding of the subject matter, mathematical maturity, critical thinking skills, and ability to work conscientiously in groups, all without creating a huge workload for the instructor.

Oct 16, 2015; 10:00am in PB 192: Marat Markin (Fresno State)

**Title:** *On Generalized Paley-Wiener Theorems for a Scalar Type Spectral Operator*

**Abstract:** Click [here](#).

Oct 09, 2015; 10:00am in PB 138: Carmen Caprau (Fresno State)

**Title:** *Movie moves for singular knot cobordisms in 4-dimensional space.*

**Abstract:** Singular knots are embeddings of 4-valent graphs in 3-dimensional space considered up to rigid-vertex isotopies, and are interesting objects that enrich the field of knot theory. We can go one dimension higher to consider cobordisms of singular knots and study them up to ambient isotopy relative to boundary. We say that two singular knots are cobordant if one can be obtained from the other by an isotopy together with a combination of births or deaths of simple unknotted curves, and saddle point transformations.

Singular knot cobordisms in 4-space can be studied diagrammatically via a projection (diagram) in 3-space. Such a diagram can be cut by planes that are perpendicular to a fixed direction in the 3-space of the projection, giving rise to a movie description for the cobordism. One may wish to recognize isotopic singular knot cobordisms. This talk will focus on a set of moves, called movie moves, that are sufficient to connect any two movie descriptions of isotopic singular knot cobordisms. In some sense, these movie moves are analogous to the Reidemeister-type moves for singular knots.

Sep 18, 2015; 10:00am in PB 138: Maria Nogin (Fresno State)

**Title:** *The Logic of a Topological Space.*

**Abstract:** In this talk we will discuss how the language of mathematical logic can be used to express and prove properties of topological spaces and dynamic topological systems (topological spaces with continuous transformations). This research area arose out of the need to design reliable hybrid control systems such as airplane autopilots.

We will present both classical and relatively recent results.

Sep 04, 2015; 10:00am in PB 138: Oscar Vega (Fresno State)

**Title:** *Feet in Orthogonal-Buekenhout-Metz Unitals.*

**Abstract:** A unital is a type of block design which when embedded in a (finite) projective plane is an example of a largest possible blocking set. Unitals have not been completely classified yet and so most of the efforts made to study them have been focused on two large families: Classical and Buekenhout-Metz. Most Buekenhout-Metz unitals are orthogonal.

Although there exist a considerable amount of literature on Orthogonal-Buekenhout-Metz Unitals (OBMUs), not much is known about the substructure formed by the points of tangency on the (tangent) lines through an external point to the OBMU, which is called the feet of the point. In this presentation we will give a geometric/combinatorial presentation of all feet in OBMUs.

Part of this work was done while Dr. Rolando Pomareda (Universidad de Chile) visited the speaker during Summer 2015.