Ryan Card, Ph.D

Dissertation: *Brownian Motion with Boundary Diffusion*
Ph.D. Advisor: Krzysztof Burdzy

Degrees

Doctor of Philosophy in **Mathematics**, University of Washington Seattle, 2009.

Master of Science in **Mathematics**, University of Washington Seattle, 2006.

Bachelor of Science in **Mathematics** (Comprehensive Option), Magna Cum Laude, University of Washington Seattle, 2002.

Bachelor of Science in **Statistics** and **Applied and Computational Mathematical Science** (Scientific Computing and Numerical Analysis Option), Magna Cum Laude, University of Washington Seattle, 2002.

Teaching and Tutoring Experience

Lecturer, Autumn 2009 to present, University of Washington Tacoma.

Mentor for Directed Reading, Spring 2010, Autumn 2012, University of Washington Tacoma.

Instructor, Summer 2004 to Spring 2009, University of Washington Seattle.

Teaching Assistant, Autumn 2002 to Winter 2009, University of Washington Seattle.

Undergraduate Research Teaching Assistant, 2002, 2006, 2008, REU in Inverse Problems with James Morrow, University of Washington Seattle.

Math Tutor, Autumn 1999 to Autumn 2008 Math Study Center, University of Washington Seattle.

Private Tutor, 2000 to 2008, (Subjects: Math, Physics, Biology, and English at middle school level and above).

Awards and Recognitions

10 Years of Service to the University, University of Washington Tacoma, 2010.

VIGRE Graduate Fellowship, University of Washington Seattle, 2006 to 2007.

Academic Excellence Award, University of Washington Seattle, 2003.

Achievement Rewards for College Scientists Fellowship, ARCS Foundation, 2002 to 2004.

Outstanding Winner Award, Mathematical Contest in Modeling, COMAP, 2002.

SIAM Award, Mathematical Contest in Modeling, SIAM, 2002.

Meritorious Award, Mathematical Contest in Modeling, COMAP, 2001.

Achievement Award for Outstanding Senior, ACMS, University of Washington Seattle, 2002.

Achievement Award for Outstanding Senior, Mathematics, University of Washington Seattle, 2001.

Presentations

Quantum Bomb Detection, Mathematics Seminar, Pacific Lutheran University, Autumn 2012.

Introductory Game Theory, Summer Math Science Leadership Program, University of Washington Tacoma, Summer 2011.

The Answer to Life, the Universe, and Everything (in Math) with Dr.Vanderpool, IAS Research Presentation, University of Washington Tacoma, Spring 2011.

Brownian Motion with Boundary Diffusion, Probability Seminar, University of Washington Seattle, Winter 2009.

A Foul-Weather Fountain, ACMS Seminar, University of Washington Seattle, Spring 2002.
SIAM Convention, Philadelphia, Summer 2002.

Papers

Card, R. *Brownian Motion with Boundary Diffusion*, unpublished, 2009.

Card, R., Esser, E., Giansiracusa, J. (2002) *A Foul-Weather Fountain*, The UMAP Journal Vol 23.3, 251-266.

Card, R., Muranaka, B. *Using Network Amalgamation and Separation to Solve the Inverse Problem*, unpublished, 2000.

Courses Taught

TMATH 110 Introductory Statistics with Applications
Addresses introductory statistical concepts and analysis in modern society. Includes descriptive statistics, graphical displays of data, the normal distribution, data collection, probability, elements of statistical inference, hypothesis testing, and linear regression and correlation. Practical examples used to demonstrate statistical concepts.

TMATH 120 Precalculus
This course is intended to prepare students for the calculus sequence. Topics include the concept of a function, its notation, and then work with polynomial, exponential, logarithmic, trigonometric, and inverse trigonometric functions.

TMATH 124 Calculus with Analytic Geometry I
First quarter in calculus of functions of a single variable. Limits and differential calculus is covered. Emphasizes applications and problem solving using the tools of calculus.

TMATH 125 Calculus with Analytic Geometry II
Second quarter in the calculus of functions of a single variable. Integral calculus is covered. Emphasizes applications and problem solving using the tools of calculus.

TMATH 126 Calculus with Analytic Geometry III
Third quarter in calculus sequence. Introduction to Taylor polynomials and Taylor series, vector geometry in three dimensions,introduction to multivariable differential calculus, double integrals in Cartesian and polar coordinates.

TMATH 214 Analytical Thinking
Course on problem solving skills, decision making methods, and precise written formulation of ideas. Sudoku, Picross puzzles, propositional and predicate logic, winning strategies, and pigeon-hole principle are covered.

TMATH 307 Introduction to Differential Equations
Introductory course in ordinary differential equations. Includes first and second order equations and Laplace transform.

TMATH 390 Probability and Statistics in Engineering and Science
Concepts of probability and statistics. Conditional probability, independence, random variables, distribution functions. Descriptive statistics, transformations, sampling errors, confidence intervals, least squares and maximum likelihood. Exploratory data analysis and interactive computing.

TESC 430 Environmental Modeling
The background and skills to understand and use basic mathematical modeling approaches to solving environmental problems. Covers basic models and case studies, and applies models to data using basic mathematical and software programming approaches.

MATH 394 Probability I

Sample spaces, basic axioms of probability, combinatorial probability, conditional probability and independence, binomial, Poisson, and normal distributions.

MATH 395 Probability II

Random variables, expectation and variance, laws of large numbers, normal approximation and other limit theorems, multidimensional distributions and transformations.