August 27, 2015

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Citizenship: USA

Education:

2002	Ph.D. Rensselaer Polytechnic Institute, Department of Mathematics, Troy, NY
1995	M.S. University of Massachusetts Lowell Department of Mathematics, Lowell, MA
1993	B.S. Atlantic Union College (departmental honors), South Lancaster, MA - Mathematics

Objectives:

In my personal research, I wish to continue to use my mathematical, computer science, and problem-solving skills to solve mathematical problems. I also plan to continue to teach undergraduates mathematics and/or computer science.

Positions Held:

* 2012 - current	Professorial Lecturer, Department of Mathematics & Statistics, American University
* 2009 - 2012	Lecturer, University of Pennsylvania, Department of Computer & Information Science
* 2008 - 2009	Visiting Scholar, University of Pennsylvania, Department of Mathematics
* 2008 - 2009	Associate Professor, Mansfield University, Department of Mathematics and Computer Science
* 2003 - 2008	Assistant Professor, Mansfield University, Department of Mathematics and Computer Science
* 2002 - 2003	Adjunct Professor, The College of Saint Rose
* 2001 - 2003	Adjunct Professor, Hudson Valley Community College
* 1995 - 2001	Teaching Assistant, Rensselaer Polytechnic Institute
* Summer 1998,	Summer 1999, Summer 2001, Fall 2001 Instructor, Rensselaer Polytechnic Institute,

* 1993 - 1995   Teaching Assistant, University of Massachusetts Lowell

Publications:

* Spot-it Solitaire, Eureka 63 (pp 20-24), published by the Mathematical Society of Cambridge
  University

* "Rational Cubic Spirals", Computer-Aided Design, Volume 40 , Issue 1, pp 3-12, Donna A.
  Dietz, Bruce Piper, and Elena Sebe, Elsevier 2007

* "Logic circuits laboratory for an undergraduate course in Discrete Mathematics" PASSHEMA
  Proceedings 2007 (published online, proceedings)

* "Three-dimensional manipulatives for undergraduate geometry classes" SSHE-MA
  Proceedings 2004 (published online, proceedings)

* "Interpolation with cubic spirals", Computer Aided Geometric Design
  Volume 21, Issue 2, pp. 165-180, Donna A. Dietz and Bruce Piper, Elsevier
  2004   http://www.elsevier.com/locate/cagd

* Ph.D. Thesis, Rensselaer Polytechnic Institute, August 2002 "Convex Cubic Spirals"

Recent Talks:

* Spot-it!, and other diversions using projective geometry MOVES 2015 conference in NYC at
  the Museum of Mathematics. This was an interactive family friendly presentation
  (August 4, 2015)

* "Twisty Puzzles for Liberal Arts Math Courses," Fall 2014 Meeting of the MD-DC-VA
  section,Mathematics Association of America, Bowie State University. (November 8, 2014)

* Joint Mathematics Meetings, Baltimore. January 15, 2014. "Projective Geometry for the
  Liberal Arts Mathematics Class"

* Acted as a "wandering minstrel" at a luncheon demo of technology on campus August 21 2013

* MOVES conference: (at MOMATH, NYC) August 5, 2013. "Spot-it Solitaire!" (also at
  Math/Stat forum Sept 2013

* "The ice-cream problem" Jan 2013 Math/Stat forum talk at American University

Computer Languages:

* JavaScript
* MATLAB
* Maple
* Java

* Python
* C (a bit rusty)
* I happily pick up new languages quickly.

Honors:

* Jack Child Teaching with Technology Award 2013 (Center for Teaching, Research, and
  Learning at American University)
* Participation in AWM Workshop for Women Graduate Students and Recent PhDs at the Joint
  Mathematics Meetings, Atlanta, GA, January 2005. Poster presentation: *Rational Cubic
  Spirals*
* National Science Foundation Grant, "Mathematical Sciences: Rensselaer-MITRE
  Graduate Research Assistantship" for 1997-1998 academic year
* (Undergraduate) Departmental Award for Creative Mathematical Thinking: 1992

Memberships:

* AWM, AMS

Leadership Positions at Mansfield University:

* General Education Subcommittee
* Treasurer of University Senate
* Faculty Senator for Mathematics
* Worked on departmental committee for NCATE accreditation
* Faculty advisor for the Math Club at Mansfield University
* Instructor for Freshmen Seminar course
* Content Area Observer for student teachers (Mansfield University BSE
  students who will be teaching Mathematics at the Secondary Level upon graduation)

Courses Taught or Now Teaching:

American University: Mathematics & Statistics

> MATH 154 - GREAT IDEAS IN MATHEMATICS - *This course explores a sample of
> beautiful branches of modern mathematics, concentrating on conceptual underpinnings
> rather than technical aspects. Includes study of infinity, number theory, fractals, and
> modern geometry, among other mathematical ideas. The course focuses on verbal and
> written communication skills and problem solving.*

> MATH 155 - ELEMENTARY MATHEMATICAL MODELS - *Study of mathematical
> subjects including linear, quadratic, polynomial, rational, exponential, and logarithmic
> functions, in the context of difference equations models. Emphasizes concepts and
> applications using numerical, graphical, and theoretical methods.*

> MATH 160 - APPLIED PRECALCULUS - *Fundamentals of algebraic, exponential, and
> logarithmic functions with emphasis on applications to problems in business and
> economics and the natural sciences.*

MATH 170 – PRECALCULUS - *Fundamentals of algebraic, logarithmic, exponential, and trigonometric functions. Usually offered every term. Prerequisite: three years of high school mathematics, or MATH-15x, or permission of department. Note: Intended primarily for students planning to take MATH-221 Calculus I.*

MATH 211 - APPLIED CALCULUS - *Continuity, limits, differentiation, and integration. Applications to biological, social, and environmental sciences and business.*

MATH 221 – CALCULUS I - *Real numbers; coordinate systems; functions; limits and continuity; differentiation and applications; trigonometric functions; indefinite and definite integration and applications; fundamental theorem of integral calculus.*

MATH 222 – CALCULUS II - *Techniques of integration, calculus of exponential and logarithmic functions, infinite series, power series representations, and analytic geometry. Usually offered every term. Prerequisite: MATH-211 or MATH-221*

University of Pennsylvania: Department of Computer & Information Science

EAS 105 - INTRODUCTION TO SCIENTIFIC COMPUTING - *This course provides an introduction to computation and data analysis using MATLAB. The intended audience is Engineering undergraduates.*

EAS 205 - APPLICATIONS OF SCIENTIFIC COMPUTING - *This course uses the visualization capabilities of MATLAB to provide students with with a geometric interpretation of key ideas.*

CIT 590 -PROGRAMMING LANGUAGES AND TECHNIQUES - *Basic algorithmic techniques and informal complexity analysis. Assignments in Python. Substantial programming assignments in Java.*

CIT 592 - MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE - *(Discrete Mathematics)*

CIT 596 - THEORY OF COMPUTATION - *Relations. Finite automata, regular languages, regular grammars, and applications. Pushdown automata, trees, context-free grammars, and applications. Turing machines. Introduction to computability and complexity theory.*

University of Pennsylvania: Department of Mathematics

MATH 241, Calculus, Part IV. Prerequisite(s): MATH 240. *Sturm-Liouville problems, orthogonal functions, Fourier series, and partial differential equations including solutions of the wave, heat and Laplace equations, Fourier transforms. Introduction to complex analysis.*

Rensselaer Polytechnic Institute

MATH 480, Numerical Computing. *A survey of numerical methods for scientific and engineering problems. Topics include numerical solution of linear and nonlinear algebraic equations, interpolation and least squares approximations, numerical integration and differentiation, eigenvalue problems, and an introduction to the numerical solution of ordinary differential equations.*

Mansfield University

MA 1115, Survey of Mathematical Ideas. *A liberal arts course.*

MA 1119, Fundamentals of Mathematical Reasoning. *This course will center on quantitative reasoning skills.*

MA 1125, Introductory Statistics. *A survey of basic statistical methods.*

MA 1128, College Algebra. *Review of ideas in basic algebra.*

MA 1165, Pre-Calculus Mathematics. *Intended to prepare students for the study of calculus.*

MA 2231 Calculus I. *This course is intended for mathematics, science, and engineering majors.*

MA 3260, Discrete Structures. *Topics will include logic, Boolean algebra, sets, functions, relations, cardinality, number systems, abstract systems, and algorithms.*

MA 3311 Differential Equations I. *Techniques for solving ordinary differential equations, superposition principle, existence and uniqueness theorem, applications.*

MA 3312 Differential Equations II. *Additional work in partial differential equations and boundary value problems, numerical methods, qualitative treatment of differential equation in phase plane, stability issues.*

MA 3329, Modern Geometry I. *An introduction to the foundations of geometry with emphasis on the axiomatic development of the Euclidean system. Prerequisite: MA 3260.*

MA 3332, Applied Combinatorics. *Applied discrete mathematics emphasizing combinatorics and graph theory. Topics will be chosen from counting methods, generating functions, recurrence relations, inclusion-exclusion, the polya enumeration formula, graph theory, covering circuits, trees, and searching and network algorithms. Prerequisite: Calculus I*

The College of Saint Rose

MAT 150, For All Practical Purposes. *This course is designed for the liberal arts students .*

MAT 151, Excursions in Modern Mathematics. *This course is designed for the liberal arts students.*

MAT 160, Ideas in Modern Mathematics. *This course is designed for the liberal arts students.*

Hudson Valley Community College

MATH 99, Essentials of Mathematics I. *A basic preparatory course. This course will not be transferable to a four year college.*

MATH 110, Intermediate Algebra. *A review of the principles of algebra and introductory trigonometry. This course may not transfer to a four year institution.*

MATH 120, Real World Mathematics. *A course designed for liberal arts students.*

Other:

* Advised: (Non-Thesis) Masters' Project Advisor, Porfirio Velasquez (Masters), "Solving Bandaged Twisty Puzzles," Project Defended/Deposited. (January 2013 - May 2014)
* Committee Member, Building Committee (Artistic Concerns). (December 2014 - Present) Collecting input from other members of my department and reporting to a committee with other department representatives, in order to move forward with artistic considerations for the new building on Nebraska Ave.
* Certified to teach online from CTRL (American University) in 2013.
* After-school tutor for PSSA test-preparation at Charter High School for Architecture and *Design (2010-2011)*
* PASSHEMA (PASSHE Mathematics Association) Webmaster March 2007 to June 2009
* Reviewer for Elsevier peer-reviewed journals in field of Computer-Aided Geometric Design (eg: *Journal of Computational and Applied Mathematics, Computer-Aided Design*)
* Question writer for ETS 2003 - 2009 (GRE, SAT, GMAT)

References Available Upon Request.

Addendum: Teaching Innovations:

After receiving my Jack Child Award (2013), I continued to design more online apps for MATH154 specifically. I made an error-correction game, an app to cipher/decipher text (alphabetic to ASCII numbers and back again), a bar-code generator/tester (it generated a real barcode but left one digit out for them to calculate, which they could alternately verify by using their phone's barcode scanners or guessing on the app). My students were very happy with these tools and were able to use them to study effectively as evidenced by solid performance on the equivalent exam questions.

I have started using videos as supplements to my course in order to help emphasize classroom ideas or specifically to help students prepare for exams. I estimated in Fall 2013 that I had posted in excess of 10 hours of videos over my 3 Fall 2013 courses combined. Students in all 3 Fall 2013 courses reported that they liked this study technique quite a bit. Most of the videos were screen captures from my laptop (which is Wacom enabled) showing me doing out the practice exams with verbal explanations. I also posted quite a few step-by-step videos for my students as they were studying the 2x2x2 and 3x3x3 Rubik's cubes.

In MATH 154, I give students a sonobe origami homework exercise to help them visualize and feel the duality between the icosahedron and the dodecahedron. They enjoy it and learn from it. It's also a good graph theory example for discussing the connectivity of the various corners and saddle points. Classroom lab time was supplemented with videos I made and placed online.

In MATH 154, I have taught them some group theory, a subject primarily reserved for upper level mathematics students. One assessment was "solve this 2x2x2 Rubik's cube". It worked out fairly well. There was partial credit available, and they could try again as many times as they wanted to.

I continue to explore ways to reach my students using You Tube and writing of JavaScript applications to enrich their out-of-class experience. I have now had more than one student tell me that they saw my videos prior to their arrival at American University. It appears that some high school teacher/s have discovered my videos and like some of them.