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Education

- Ph.D. Mathematics, University of Tennessee, Knoxville, May 2014
 - o Advisor: Dr. David F. Anderson
 - o Dissertation Title: Properties of Ideal-Based Zero Divisor Graphs of Commutative Rings
- B.A. Mathematics and Computer Science, Maryville College, May 2008
 - Graduated Summa Cum Laude
 - o Senior Thesis Advisor: Dr. Jeff Bay
 - o Senior Thesis Title: The Mathematics and Computer Science of "Deal or No Deal"

Teaching Experience

- Assistant Professor of Mathematics with Joint-Faculty Appointment at ORNL, Maryville College, 2023-Present.
- Senior Lecturer in Mathematics, Maryville College, 2022-2023.
- Lecturer in Mathematics, Maryville College, 2017- 2022.
- Visiting Assistant Professor of Mathematics, Maryville College, 2014-2017.
- Graduate Teaching Associate, University of Tennessee, Knoxville, 2008-2014.

Experience as Primary Instructor (Reverse Chronological Order of 1st Time Teaching)

- Introduction to Computer Science and Programming in Python
 - An introduction to computer science and structured programming with emphasis on program design and implementation, debugging, documentation, and programming projects. Laboratory work supplements and expands lecture topics and offers supervised practice using programming. Language used in CSC 111 is Python.
- Introduction to 3D Printing
 - As a direct application of geometric and analytical thinking this course teaches students computer-aided design (CAD) through applications like Tinkercad and Fusion 360. Students will apply geometric reasoning to design, draft, 3D print, and iterate models to solve real life problems. Students will learn about the process of Fused Deposition Modeling and Stereolithography in this course. The course also includes an introduction to the hardware, firmware, and software involved in 3D printing along with how mathematics is applied in these.
- Philosophy and Theological Foundations of Ethical Thought
 - A senior capstone, interdisciplinary course which considers the ethical dimension of the human experience, including historic and contemporary ethical frameworks designed to engage the students' ethical stances. Students reflect on general education, major courses of study and chosen vocation. Special concern to address service, global citizenship, and responsibility for the common good. Offered in the January Term with limited offerings at other times.
- Mathematical Reasoning
 - Classical and modern topics in number theory, logic, geometry, and probability with emphasis on problem solving. Focus given to Set Theory, Infinity, Complex Numbers, Fractals, and Number Theory.
- College Algebra
- Precalculus with Trigonometry
 - o Review of algebraic, logarithmic, exponential, and trigonometric functions.
- Basic Calculus
 - For students not planning to major in the physical sciences, engineering, mathematics, or computer science. Calculus of algebraic, exponential, and logarithmic functions, with applications.
- Calculus 1
 - Single variable calculus especially for students of science, engineering, mathematics, and computer science. Differential calculus with applications.

- Calculus 2
 - A continuation of Mathematics 125. Topics include the definite integral and its applications, sequences and series, and approximations using Taylor series.
- Linear Algebra
 - First course in the algebra of simultaneous linear equations and matrices. Includes Gaussian elimination, determinants, vector spaces, linear transformations, eigenvalues, and eigenvectors.
- Discrete Structures/Mathematical Proofs
 - o An introduction to mathematical proof techniques with topics based in discrete mathematics.
- Introduction to Statistics
 - An introduction to the practice of statistics taken by students of all disciplines.
- Modern Algebra
 - 0 An Introduction to abstract algebra. Topics include groups, rings, integral domains, and fields.
- Advanced Calculus
 - o Elementary Real Analysis covering sequences, continuity and limits, differentiability, and Riemann Integration.
- Senior Study
 - Advised student in completion of Senior Study projects. I advised two students in the Fall 2014 completing studies on congruencies and zero-divisor graphs. I advised one student throughout his entire Senior Study during the AY15-16; his topic was on spirographs. Nico Velez completed a detailed study of magic squares. This concluded with novel research which was published in the Rose-Hulman Journal of Undergraduate Mathematics. Current research involves game programming and 3D printing.

Experience as Course Assistant

- Numerical Algorithms Lab Assistant
 - Development and application of fundamental algorithms for finding roots of equations, solving systems of linear equations, interpolating, fitting data using least-squares, differentiation, integration, and solving ordinary differential equations. Lab Assistant for this course. Assisted students in writing Matlab programs. The position also included evaluation of the students' programs.
- Basic Calculus Recitation Leader
 - For students not planning to major in the physical sciences, engineering, mathematics, or computer science. Calculus of algebraic, exponential, and logarithmic functions, with applications. Recitation offers small groups of students an hour of one-on-one with a teaching assistant for the course. During this time, problems are discussed and worked as well as quizzes given. Responsibilities of recitation leader included problem help, office hours, quiz giving, quiz and exam grading.

Presentations

- "Classification of Complemented/ Uniquely Complemented Ideal-based Zero-divisor Graphs & When Ideal-based Zero-divisor Graphs have Ends", AMS Special Session on Commutative Ring Theory, University of Wisconsin, Eau Clair, September 2014.
- "Classification of Finite Planar Nontrivial Ideal-based Zero-divisor Graphs for Commutative Rings," AMS Special Session on Commutative Ring Theory, University of Tennessee, Knoxville, TN, March 2014.
- "Classification of Finite Planar Nontrivial Ideal-based Zero-divisor Graphs for Commutative Rings with nonzero Identity," Poster Presentation, Joint Mathematics Meeting, Baltimore MD, January 2014.
- "Programming in Abstract Algebra and Non-trivial Planar Ideal-based Zero-divisor Graphs," invited undergraduateseminar talk, Maryville College, Maryville TN, Spring 2013.
- "Zero Dimensional Rings," Seminar in Modern Algebra, University of Tennessee, Knoxville TN, Fall 2011.
- "The Mathematics and Computer Science of Deal or No Deal," Mid-southeast Association for Computing Machinery Conference, 2008.

Research

My research interests vary from the pure to applied. Here is a summary of some recent research topics:

- Commutative Ring Theory
- Zero-divisor Graphs
- Magic Squares
- Fused Deposition Modeling
- Programming for Environmental Risk

I am currently working with the Risk Assessment Information Systems team at Oak Ridge National Laboratory. For more information on this group's work visit rais.ornl.gov.

Publications

- Smith, Jesse Gerald, "Isomorphisms and Planarity of Zero-Divisor Graphs", Chapter in "Advances in Commutative Algebra", Page 245-263, Springer, 2019.
- Smith, Jesse Gerald, "When Ideal-Based Zero-Divisor Graphs are Complemented or Uniquely Complemented," International Electronic Journal of Algebra, Volume 21,198-204.

Other Professional Experience and Committee Work

- Ongoing programming research at ORNL with the Risk Assessment Information System team. Unofficial liaison for STEM students interested in ORNL/DOE Undergraduate Research.
- Participation in various Highland Days, STEM Nights, Meet Maryville's, and Scholarship Days.
- Returned as Chair of Keepers of the Covenant Fall 2023 to present.
- Autodesk Certified Associate in CAD for Mechanical Design, 2022.
- Elected Member of Academic Life Council, 2019-2021. Recorder.
- Advisor of MC3D (student organization on 3D printing).
- Facilitated creation of Makerspace at MC. This included donating several 3D printers to the space. I continue to work with students in 3D printing (2019-Present).
- MC Online education workshops (Summer 2019).
- Participated in Teaching ETH 490 workshop. (2018).
- Led research on creation of BS and modified BA degree in Mathematics at Maryville College (Fall 2017)
- Chair of Keepers of the Covenant Committee (2016-2020).
- Assisted in "Mathematical Reasoning" Domain Group for Core Revision, Maryville College, Fall 2014.
- Undergraduate Poster Session Judge, Joint Mathematics Meeting, Baltimore MD, January 2014.
- Grader for FERMAT II Exam, University of Tennessee, Fall 2013.
- Assisted in Pro2Serve Mathematics Competition, University of Tennessee, Fall 2011, Fall 2012 Competitions.
- Assisted Dr. Dan Ross in Coordinating University of Tennessee Graduate Students to give talks at Maryville College, Fall 2013-Spring 2014.

Awards

- Spirt of the Covenant Award, 2022. (First two-time winner of this award.)
- Gibson Award for CAD Training, Summer 2020.
- Spirit of the Covenant Award, 2018.
- Graduate Student Senate Travel Award, Travel to JMM in Baltimore MD, 2014.
- Edgar and Dorothea Eaves GTA Teaching Award Finalist, 2009.
- Jerry L. Pietenpol Computer Science Award, Maryville College, 2007 AND 2008.
- Outstanding Achievement in French, Maryville College, 2004.

References

- Dan Ross, Associate Professor of Mathematics, Maryville College, Marvyille, TN.
 <u>Dan.ross@maryillecollege.edu</u>. (865)-981-8165
- Jeff Bay, Professor of Statistics, Maryville College, Marvyille, TN.
 <u>Jeff.bay@maryvillecollege.edu</u> (865)-981-8023
- Irene Guerinot, Senior Lecturer in Physics, Maryville College, Maryville, TN.
 <u>Irene.guerinot@maryvillecollege.edu</u> (865)-981-8271
- Karen Beale, Professor of Psychology, Maryville College, Maryville, TN
 - o Karen.beale@maryvillecollege.edu (865)-981-8166