

Laurie A. Cuffney

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Professional Overview Mathematical modeler experienced with infectious disease models interested in applying theoretical modeling concepts to large real world data sets. Strong MATLAB programmer with experience in multiple other languages. Interested in constantly expanding knowledge base through work environment and other available opportunities.

Master's Thesis *A Comparison of Threshold Parameters in Deterministic SIS and SI_1I_2S Models and Stochastic SIS and SI_1I_2S Models.* (Under the direction of Dr. John Franke.)

Investigated the effect of stochastic parameters on the behavior of infectious disease models. Coded MATLAB programs to simulate an SIS model with parameters having various distributions and MATLAB programs using a binary search algorithm to find specific interval endpoints. Established a new threshold parameter utilizing the expected value for the stochastic *SIS* model resulting in a reliable prediction of long term model behavior.

Education **NORTH CAROLINA STATE UNIVERSITY** Raleigh, NC

Master of Science in Applied Mathematics, Dec 2013

- Relevant Courses: Mathematical Modeling, Dynamics and Chaos, Probability and Stochastic Processes, Advanced Programming, Linear Functional Analysis, Partial Differential Equations, Numerical Solutions to Partial Differential Equations: The Finite Element Method, Linear Algebra.

BREVARD COLLEGE

Brevard, NC

Bachelors of Arts in Mathematics and Music, May 2009

- Magna cum laude
- Named Outstanding Mathematics Graduate 2009

Skills **Proficient in:** MATLAB, Latex, Python, Maple, Microsoft Office: OneNote, Outlook, Word, Excel, Powerpoint, Access

Experience in: C, Java, Hadoop, MapReduce, JSL, OpenGL

Experience **Math Instructor** Longleaf School of the Arts, Raleigh, NC Aug 2014 - current

- Integrated Math II and III
- Create daily notes and homework for each class
- Create and grade assessments for each class

Guard Instructor: Middle Creek High School, Apex, NC June 2012 – Current
Bunn High School, Bunn, NC May 2011 – Current

- Run and organize rehearsals with students
- Schedule and collaborate with guest instructors
- Choreograph dance and equipment routines

Long Term Sub Math Instructor Cary Academy, Cary, NC Mar 2014 - June 2014

- Algebra I and Honors Algebra II
- Create daily notes and homework for each class
- Create and grade assessments for each class
- Co-teach Honors Algebra II: Jointly plan and create notes and homework as well as assessments. Each co-teacher teaches two of the four honors algebra II sections.

Governor's School Selection Committee: DPI, Raleigh, NC Feb. 2012, '13, '14

- Review applications of mathematics students to the Governor's school and select participants to attend the mathematics program.

Grader: North Carolina State University, Raleigh, NC Aug. 2013 – Dec.2013

- Grade all tests for MA 303 Difference and Differential Equations.
- Lead and prepare problem sessions held before exams.

Math Instructor: NC Governor's School East, Raleigh, NC Summer 2011,'12,'13

- Create a 5-week course curriculum on high level mathematics topics for advanced high school students (2011–Quantum computing, 2012 & 2013–Topology).
- Mentor 3-4 student research groups on various topics within mathematics.
- Assist in running and writing a weekly math contest.

Intern: SAS Institute, Cary, NC

Summer 2009

- Mentor Russ Wolfinger
- Learn the basics of JSL, the JMP scripting language, and the basics of OpenGL
- Utilize the JSL interface to OpenGL to build a 3D model of a DNA helix.
- Contribution to SAS paper: Miclaus, Hales, Barbour, Lee, Martin, Wolfinger;
From Genomes to Galaxies: 3D Graphics in JMP Scripting Language

Awards & Presentations

Member of: SIAM, AMS, Alpha Chi, Omicron Delta Kappa, Phi Kappa Lambda

Awarded: Outstanding Mathematics Graduate 2009, Rachel Cathey Daniels math scholarship recipient 2008-2009, Who's Who Among American Universities 2008-2009, L. Virginia Tillotson Award in music 2007-2008

CANCAS Conference 2009 Student Presenter

The Mathematical Implications of Integer Notation in 20th Century Music