

Samantha E. Davies

CONTACT INFORMATION

Email: daviess@uw.edu

EDUCATION

University of Washington

09/2016-present

Degree: PhD in Mathematics

Cumulative QPA: 3.82/4.0

University of Illinois at Chicago

08/2015-07/2016

Degree: MS in Mathematics

Cumulative QPA: 3.84/4.0

Carnegie Mellon University

08/2011-05/2015

Degree: BS in Mathematical Sciences, minor in Economics

College and University Honors

Cumulative QPA: 3.78/4.0

RESEARCH EXPERIENCE

UW- Paul G. Allen School of Computer Science and Engineering Healthcare and mechanism design (ongoing)

06/2017-present

- Performed research under the direction of Anna Karlin, a Microsoft Professor in the CSE department at UW
- Studied adverse selection settings to understand and tackle the challenges of allocating healthcare
- Constructed a deterministic algorithm for the FedEx problem and proved results on its performance compared to the optimal randomized algorithm

UIC- Department of Mathematics, Statistics, and Computer Science Planted clique

10/2015-06/2016

- Performed research with a group of UIC Ph.D. students under the direction of Lev Reyzin, an Assistant Professor in the MSCS department at UIC
- Studied variants of the planted clique problem and other graph distinguishing problems using statistical algorithms. Work for this project is ongoing

Carnegie Mellon University- Department of Mathematical Sciences Knight's tour

02/2015-05/2015

- Performed research under the direction of Carl Yерger, who was a Shelly Visiting Professor at CMU
- Implemented algorithms which can find knight's tours on small Aztec diamonds and showed traditional inductive arguments for knight's tours fail for Aztec diamonds
- The resulting paper, *Algorithms for Finding Knight's Tours on Aztec Diamonds*, has been accepted for publication in *Involve: A Journal of Mathematics*

Brown University- Department of Applied Mathematics Leadership Alliance Summer Research Program

06/2014-08/2014

- Performed research under the direction of Johnny Guzman, an Associate Professor of Applied Mathematics at Brown University
- Numerically and analytically examined the behavior of solutions of the one dimensional generalized model vorticity equation in search of determining whether solutions to the three dimension Euler Equations exist globally

Carnegie Mellon University- Department of Mathematical Sciences Summer Undergraduate Applied Mathematics Institute

06/2013-08/2013

- Studied signal processing, mathematical software and other topics with a group of 14 other mathematics students from across the country
- Performed research under the direction of Gregory Johnson, an Assistant Teaching Professor of Mathematics at CMU
- Discovered and proved properties in binomial coefficients produced using the factorial defined by Manjul Bhargava over geometric progressions

TEACHING

- **Math 124** (Calculus I, Winter & Spring 2017)
Taught 2 active learning styled sections twice each week, held weekly office hours, graded exams and weekly quizzes.
- **Math 126** (Multivariable Calculus, Fall 2016)
Taught 2 lecture styled sections twice each week, held weekly office hours, graded exams and weekly quizzes.
- **Math 121** (UIC Pre-Calculus, Fall 2015 and Spring 2016)
Taught 3 active learning styled sections twice each week, held weekly office hours, graded exams.
- **21-241** (CMU Matrices and Linear Transformations, Spring 2015)
Taught 1 lecture styled section twice each week, held weekly office hours, graded exams and weekly homeworks
- **with high probability**
Manage my math blog with high probability, <https://samidavies.wordpress.com>. Some posts are about topics in advanced mathematics, but most are aimed towards a general audience and motivated by real world examples! (My first year at UW really hindered my writing, but after September 13th 2017, 4pm EST, it should pick back up again.)

MANAGEMENT AND LEADERSHIP EXPERIENCE

- Community Advisor for Morewood Gardens- 08/2014-05/2015
Assisted in the selection, hiring, and training of a staff of 11 Resident Assistants. Lead the house staff in the development of a shared house vision for 470 residents, while serving as an active point of interface between the house community and the greater CMU community.
- Resident Assistant for Morewood E-Tower, Donner House- 08/2012-05/2013
Was responsible for providing educational programs and paraprofessional counseling for a residence wing of 35 women while resolving issues on diversity, alcohol/ drug abuse, academic performance and social acceptance for a building of 240 first year students. Conducted the live-out mentor program by organizing and fostering mentor-mentee relationships and coordinating various administrative tasks in support of mentor activities.
- Vice President for Kappa Kappa Gamma: Delta Xi Chapter 01/2013-12/2013

PROGRAMMING LANGUAGES

Experience working with L^AT_EX, Python, Maple, Matlab

RELEVANT COURSEWORK

Carnegie Mellon University:

Discrete Mathematics (2 semesters)
Linear Algebra (2 semesters)
Mathematical Finance (2 semesters)
Probability (2 semesters)

Real Analysis (2 semesters)
Differential Equations
Numerical Methods
Combinatorics

Principles of Computing
Operations Research
Algebraic Structures
Graph Theory

University of Illinois at Chicago:

The Probabilistic Method
Foundations in Data Science

Computer Algorithms II
Measure Theory

Discrete Geometry
Complex Analysis

University of Washington:

Adv. Linear Algebra (2 quarters)

Modern Algebra (3 quarters)

Complex Analysis (3 quarters)