

**Daniel Brumley**  
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## EDUCATION

- 8/18-7/19      **Completed coursework toward PhD in Applied Mathematics**  
University of Delaware, Newark, DE  
GPA: 3.45
- Passed first tier preliminary exams in Analysis and Vector Spaces in 2/19.
- 1/17-5/18      **M.S. with Honors in Applied Mathematical Science**  
University of Central Oklahoma, Edmond, OK  
GPA: 4.00
- Thesis: *Existence Results for a Class of Even-Order Boundary Value Problems*  
Thesis Advisor: Dr. Britney Hopkins
- 8/10-5/16      **B.S. in Mathematics, Minor in Computer Science**  
University of Central Oklahoma, Edmond, OK  
GPA: 3.40

## RESEARCH EXPERIENCE

- 6/19-7/19      **UNIDEL Summer Research Assistant**  
Department of Mathematical Sciences, University of Delaware  
Advisor: Dr. Pak-Wing Fok
- Investigated the stochastic differential equations and corresponding PDEs governing biophysical processes related to protein folding under Smoluchowski and Klein-Kramer dynamics
  - Core work revolved around latter scheme: developed appropriate boundary conditions, verified a steady state solution, and derived backward Fokker-Planck equation
  - Funded via \$3600 UNIDEL Summer Research Grant
- 8/17-5/18      **Research Assistant (unpaid)**  
Department of Mathematics and Statistics, University of Central Oklahoma  
Advisor: Dr. Tyler Cook
- Developed simulations to assess the efficacy of a new methodological approach that utilized guided regularized random forests to identify important genes and genetic pathways when modeling for a particular biological outcome using microarray data
  - Wrote simulations in R making use of the BUDDY supercomputer
- 1/16-5/16      **Project STLR Research Assistant**

Center for Transformative Learning, University of Central Oklahoma  
Advisor: Dr. Brad Paynter

- Programmed an algebra assessment in WeBWork for the Department of Mathematics to gauge readiness of incoming Calculus I students
- Implemented assessment via Perl and the Problem Generation Markup Language (PGML)
- Funded for 10 hours of work per week through the Center for Transformative Learning

8/15-5/16      **Research Assistant**

College of Mathematics and Science, University of Central Oklahoma  
Advisor: Dr. Britney Hopkins, Dr. Kristi Karber

- Worked with advisors and a team of four tutors to provide weekly free ACT prep to low-income students from Douglass Mid-High School in Oklahoma City
- Created and evaluated practice tests to monitor student progress
- Funded for 10 hours of work per week through the College of Mathematics and Science

1/15-5/16      **Research Assistant (unpaid)**

Department of Mathematics and Statistics, University of Central Oklahoma

Advisors: Dr. Michael Fulkerson, Dr. Britney Hopkins, Dr. Kristi Karber, Dr. Thomas Milligan

- Used functional analysis techniques to demonstrate existence of solutions to multiple classes of differential equations

## TEACHING EXPERIENCE

8/18-7/19      **Teaching Assistant**

Department of Mathematical Sciences, University of Delaware

- Planned and led discussion sessions for multiple sections of Calculus 1
- Wrote and graded discussion quizzes and weekly group work
- Proctored exams and assisted in the grading of midterm and final exams

8/12-5/18      **Private Tutor**

- Privately tutored students of all levels in the following areas: mathematics (elementary to high school mathematics, calculus, business calculus, differential equations, and linear algebra); statistics (mathematical statistics, engineering statistics); physics (mathematical physics); general test prep (ACT, SAT, OCCT)

1/17-5/18      **Teaching Assistant**

Department of Mathematics and Statistics, University of Central Oklahoma

- Graded papers for several sections of Foundations of Geometry and Measurement, proctored exams, and tutored students in the Mathematics Lab

8/14-5/16      **Supplemental Instructor**

College of Mathematics and Science, University of Central Oklahoma

- Attended all lectures of an assigned Calculus 1 class
- Planned and led two 1-hour Supplemental Instruction sessions each week to solidify the students' understanding of Calculus concepts
- Maintained records of student attendance and session goals and met weekly with supervisors

## ADDITIONAL EXPERIENCE

6/16-9/16      **Software Engineer**  
Boeing

- Maintained and updated software for surveillance aircraft platforms that enable the detection, identification, and tracking of airborne threats

5/10-7/14      **Assistant Manager**  
Murphy USA

- Supported the Manager with the daily operations and maintenance of the store
- Trained new employees

## PUBLICATIONS

- 2017      O. Bennett, **D. Brumley**, B. Hopkins, K. Karber, and T. Milligan, The Multiplicity of Solutions for a System of Second Order Differential Equations, *Involve: A Journal of Mathematics*, Vol. 10(1).
- 2016      **D. Brumley**, B. Hopkins, K. Karber, and T. Milligan, The Existence of Solutions of Classes of Even-Order Differential Equations, *Advances in Dynamical Systems and Applications*, Vol. 11(1).
- 2016      **D. Brumley**, M. Fulkerson, B. Hopkins, and K. Karber, Existence of Positive Solutions for a Class of Fourth Order Boundary Value Problems, *International Journal of Differential Equations and Applications*, Vol. 15(2).

## PRESENTATIONS

- 2018      **D. Brumley**, S. Chakraborty, and T. Cook. *Pathway and Gene Selection with Guided Regularized Random Forests*. Contributed talk presented by Tyler Cook. Contributed Session: 2018 ICSA Applied Statistics Symposium. New Brunswick, NJ.
- 2018      **D. Brumley**. *Existence Results for a Class of Even-Order Boundary Value Problems*. Public thesis defense. University of Central Oklahoma. Edmond, OK.
- 2018      **D. Brumley**. *The Existence of Solutions to an Even-Order Boundary Value Problem*. Poster presentation. Oklahoma Research Day. Enid, OK.
- 2018      **D. Brumley**. *The Existence of Solutions to an Even-Order Boundary Value Problem*. Contributed talk. AMS Contributed Paper Session on Differential Equations: 2018 Joint Mathematics Meetings. San Diego, California.
- 2018      **D. Brumley**. *Pathway and Gene Selection with Guided Regularized Random Forests*. Contributed talk. MAA General Contributed Paper Session on Probability and Statistics: 2018 Joint Mathematics Meetings. San Diego, California.
- 2017      **D. Brumley**. *Random Forest Visualization with Breast Cancer Data*. Presentation. Center for Research and Education in Interdisciplinary Computation (CREIC) Symposium. Edmond, OK.
- 2016      **D. Brumley**. *A Boundary Value Problem of Sturm-Liouville Type*. Contributed talk. OK-AR MAA Meeting. Conway, AR.

- 2016      **D. Brumley** and J. Lawrence. *The CCA Urban ACT Prep Program*. Poster presentation. Oklahoma Research Day. Tahlequah, OK.
- 2016      **D. Brumley**. *The Existence of Solutions for a Class of Even Order Differential Equations*. Poster presentation. Oklahoma Research Day. Tahlequah, OK.
- 2016      **D. Brumley**. *The Existence of Solutions to an Even Order Right Focal Boundary Value Problem*. Poster presentation. 2016 Joint Mathematics Meetings. Seattle, WA.
- 2013      **D. Brumley**. *The Problem of Induction*. Talk. University of Central Oklahoma Liberal Arts Symposium. Edmond, OK.

## GRANTS, AWARDS, AND HONORS

- 2019      *UNIDEL Summer Research Grant*
- 2018      *MAA Student Travel Grant*
- 2017      *UCO Research, Creative and Scholarly Activities Presentation Grant*
- 2017      *CREIC Symposium – Best Visualization Award*
- 2016      *UCO Department of Mathematics and Statistics Outstanding Graduating Senior Award*
- 2016      *UCO Department of Mathematics and Statistics Student Achievement Award*
- 2016      *OK-AR MAA R.B Deal Undergraduate Oral Presentation Award (1<sup>st</sup> Place)*
- 2016      *MAA Student Travel Grant*
- Multiple Semesters      *Dean's Honor Roll, President's Honor Roll*

## TECHNICAL SKILLS

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|------------------------|--------------------------------------|
| MICROSOFT OFFICE SUITE | Excel, VBA, Word, PowerPoint, Access |
| PROGRAMMING SKILLS     | R, C++, Java, SQL, LaTeX             |
| OPERATING SYSTEMS      | OS X, Windows                        |