September 2025

Curriculum Vitae

Jared McBride

Education

Ph.D. Applied Mathematics
University of Arizona, Tucson, Arizona. August 2023.
Graduate minor in **Systems and Industrial Engineering**.
Dissertation: *The Estimation of High-contrast Spectra via Iterated Whitening.*
Advisor: Kevin Lin.

M.S. Applied Mathematics
University of Arizona, Tucson, Arizona. May 2018.
Advisor: Kevin Lin.

M.S. Mathematics
Brigham Young University, Provo, Utah. August 2016.
Thesis: *Steady State Configurations of Cells Connected by Cadherin Sites.*
Advisor: John Dallon.

B.S. Mathematics and Mathematics Education
Brigham Young University. April 2012.

Employment

Southern Virginia University, Buena Vista, Virginia
Assistant Professor of Math 2023 - present

Mathematics Department, UA, Tucson, Arizona
Instructor 2023

Mathematics Department, UA, Tucson, Arizona
Graduate Teaching Assistant 2016 - 2022

Chemistry & Biochemistry Department, UA, Tucson, Arizona
GRE Preparation Math Tutor for the Maximizing Access to Research Careers (MARC) Program 2016

Mathematics Department, BYU, Provo, Utah
Research Assistant to Dr. J. Humphreys 2015 - 2016
Proofread several chapters of *Foundations of Applied Mathematics, Volume I: Mathematical Analysis*

Mathematics Department, BYU, Provo, Utah
Graduate Teaching Assistant 2014 - 2016

Utah Valley University, Orem, Utah
Assistant Coordinator in the Mathematics Tutorial Lab 2013 - 2014

Vernal Junior High, Vernal, Utah
Math Teacher (8th grade) 2012 - 2013

Teaching

Southern Virginia University

(August 2023 - present)

Semester	Course	Units
Fall 2025	CSC 340: Artificial Intelligence	3
Fall 2025	MAT 343: Linear Algebra	3
Fall 2025	MAT 221: Statistics	3 (×2)
Fall 2025	MAT 115: College Algebra	3
Summer 2025	MAT 221: Statistics	3
Spring 2025	CSC 333: Computational Data Science	3
Spring 2025	MAT 498: Mathematics Capstone	1
Spring 2025	MAT 221: Statistics	3 (×3)
Fall 2024	MAT 341: Real Analysis	3
Fall 2024	MAT 343: Linear Algebra	3
Fall 2024	MAT 221: Statistics	3 (×3)
Spring 2024	MAT 410: Introduction to Numerical Analysis	3
Spring 2024	MAT 341: Calculus III	3
Spring 2024	MAT 221: Statistics	3 (×2)
Spring 2024	MAT 116: Trigonometry	1
Spring 2024	MAT 115: College Algebra	3
Fall 2023	MAT 343: Linear Algebra	3
Fall 2023	MAT 221: Statistics	3 (×2)
Fall 2023	MAT 115: College Algebra	3

Department of Mathematics, University of Arizona

(Fall 2016 - Spring 2023)

Semester	Course	Units
Spring 2023	Math 116: Business Calculus	3 (×2)
Spring 2022	Math 196V: Vector Calculus Supplement	1
Fall 2021	Math 196V: Vector Calculus Supplement	1
Spring 2021	Math 129: Second Semester Calculus	3
Fall 2020	Math 122B: First Semester Calculus	4
Spring 2020	Math 122A: Functions of Calculus	1 (×2)
Fall 2019	Math 122A: Functions of Calculus	1 (×2)
Spring 2019	Math 122A: Functions of Calculus	1 (×2)
Fall 2018	Math 120R: Precalculus	4
Summer 2018	Math 116: Business Calculus (online)	3
Spring 2018	Math 116: Business Calculus	3
Fall 2017	Math 120R: Precalculus	4

Semester	Course	Units
Spring 2017	Math 116: Business Calculus	3
Fall 2016	Math 112: College Algebra	3 (×2)

Department of Mathematics, Brigham Young University

(Spring 2014 - Summer 2015)

Semester	Course	Units
Fall 2015	Math 110: College Algebra	3
Summer 2015	Math 112: Calculus I	4
Winter 2015	Math 102: Quantitative Reasoning	3
Fall 2014	Math 110: College Algebra	3
Spring 2014	Math 102: Quantitative Reasoning	3

Teaching Assistant

In all courses I assisted the instructor in varying capacities ranging from grading, holding office hours, holding problem sessions, etc.

Department of Mathematics, University of Arizona

(Fall 2018 - Spring 2022)

Semester	Course	Instructor
Spring 2022	Math 485: Intro to Mathematical Modeling	Joceline Lega
Spring 2022	Math 584B: Principles of Analysis	Shankar Venkataramani
Fall 2021	Math 584A: Principles of Analysis	Shankar Venkataramani
Spring 2021	Math 527B: Principles of Analysis	Shankar Venkataramani
Fall 2020	Math 527A: Principles of Analysis	Shankar Venkataramani
Spring 2020	Math 527B: Principles of Analysis	Shankar Venkataramani
Fall 2019	Math 527A: Principles of Analysis	Shankar Venkataramani
Summer 2019	Co-facilitated program sponsored qualifying exam prep course	
Spring 2019	Math 527B: Principles of Analysis	Leonid Friedlander
Summer 2018	Co-facilitated program sponsored qualifying exam prep course	
Fall 2018	Math 527A: Principles of Analysis	Leonid Friedlander

Course Development

Artificial Intelligence (*Southern Virginia University CSC 340, upper division computer science course artificial intelligence*) I developed the curriculum to focus on developing deep conceptual understanding of neural networks (including backpropagation) as well as implementation of these concepts in Python using libraries. Though it spends most of the time looking at supervised learning, unsupervised learning (PCA and k-means) as well as some reinforcement learning is also discussed. The course also includes a significant ethics component.

Computational Data Science (*Southern Virginia University CSC 333, upper division computer science course computational data science*) I developed the curriculum to focus on developing practical skills in data science using Python. The course covers data cleaning, visualization, and analysis using libraries such as Pandas, Matplotlib, Seaborn, and some Scikit-learn. The big concept discussed was multiple regression and how to interpret the results of a regression analysis.

Mathematical Modeling (*University of Arizona Math 485, senior level project-based course mathematical modeling*) I assisted Dr. Joceline Lega in converting the course to an asynchronous, fully online format. My principle task was to use Manim (a Python package for programmatic mathematical animation) to create animation to improve the accessibility of the interactive video presentations.

Mentoring

Southern Virginia University

- I mentored two undergraduate seniors in their **senior capstone projects**.
  - Caden Eskelsen (Spring 2025, project: *Passive and Active Investment: A Look At Mutual Fund Performance*)
  - Reilly Kartchner (Fall 2023, project: *The Mathematics of Neural Networks*)

Department of Mathematics, University of Arizona

- As part of the **UA RTG-REU** 2021 summer program and again in summer 2022 (both organized by Dr. Kevin Lin and Dr. Laura Miller), I mentored a total of three undergraduate researchers
  - David Parra
  - Benjamin Shearer
  - Darianne Sanchez
- I mentored three **undergraduate research groups** as part of a senior level modeling course.
  - Spring 2022. Students: Daniel Peck, Aliyah Postell, Marc Bulau, Khaled Ali, Katie Fitts
  - Spring 2020. Students: Sean Raglow, Gordon Downs, Wes Johnson, Ryan Lewis
  - Spring 2018. Students: Haoliang Shi, Xiaoyu Shi, Haozhe Xu, Ziwei Yu
- As part of the **Graduate Student Mentor Program** I mentored three students
  - John Park
  - Florence Dungan
  - Jalen Cates

Service

- Curriculum Committee member at Southern Virginia University (2023 - present).
- Graduate representative on the undergraduate committee for the University of Arizona Mathematics Department (2022 - 2023).

Research Interests

General: Data-driven model reduction, signals and systems theory, stochastic models and stochastic differential equations, power distribution systems with renewable energy sources, smart grids, cell movement, urban traffic.

Current projects: Applying classical signal processing theory to data-driven model reduction, power spectrum estimation, Model reduction for power systems networks, and modeling movement of the slime mold *Dictyostelium discoideum*.

Publications

Jared McBride and Kevin K Lin, *A comparison of spectral estimation methods for the analysis of chaotic and stochastic dynamical systems.* In preparation, 2023.

Darin J Law, Jason P Field, Luke A Wilson, Mallory F Barnes, David D Breshears, Jared McBride, Greg A Barron-Gafford, Angelina Martínez-Yrízar, Alberto Búrquez, and Enriquena Bustamante Ortega. *Heatwave compounded warmer drought: Shifts in time to tree mortality and tree mortality duration.* In preparation, 2023.

Conferences

Third Symposium on Machine Learning and Dynamical Systems, September 26 - 30, 2022, The Fields Institute, Toronto, Canada
Presented poster: *A comparison of spectral estimation methods for the analysis of chaotic and stochastic dynamical systems*

Volunteer Community Involvement

Church of Jesus Christ of Latter-day Saints Full-time Missionary. Manchester, England, 2007-2009

Central Utah STEM Fair Judge. Provo, Utah, 2014

ACCESS (BYU big brother/big sister program) big brother volunteer. Provo, Utah, 2014

π-Day volunteer. Provo, Utah, 2014-2016

S.Y.STEM Coalition Science Day volunteer. Tucson, Arizona, 2016

S.Y.STEM Coalition Summer Robotics Camp facilitator assistant. Tucson, Arizona, 2019

Church of Jesus Christ of Latter-day Saints recent involvement in local congregation (ward). Tucson, Arizona,

- Nursery Leader 2016 - 2017
- Sunday School leadership 2017 - 2018
- Men's organization (Elders Quorum) leadership 2018
- Ward Mission Leader 2018-2019
- Assistant Ward Clerk (Membership) 2019 - 2023
- Primary Chorister 2023

Skills

Git, Julia, Python, Manim (Python package for programmatic mathematical animation).