Sara (Myers) McKnight

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Department of Mathematics
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Education

- **University of Nebraska - Lincoln** — Lincoln, NE
  Ph.D. Candidate in Mathematics — *Aug. 2018 - Current*
  - Thesis Advisor: George Avalos
- **University of Nebraska - Lincoln** — Lincoln, NE
  Masters of Science in Mathematics — *Aug. 2018 - May 2020*
- **University of Scranton** — Scranton, PA
  BS in Biomathematics, BS in Mathematics; Summa Cum Laude — *Aug. 2014 - May 2018*

Selected Coursework

Course Number	Course Title	Textbook
MATH 994	Reading Course: Finite Element Methods	*Finite Element Solutions of Boundary Value Problems*, Axellson & Barker
MATH 934	Navier-Stokes Equations	N/A
MATH 937	Nonlinear Partial Differential Equations	*Partial Differential Equations*, 2nd ed, Evans
MATH 941	Partial Differential Equations	*Partial Differential Equations*, 2nd ed, Evans
MATH 928/929	Functional Analysis I/II	*A Course in Functional Analysis*, 2nd ed, Conway
MATH 924	Theory of Analytic Functions I	*Real & Complex Analysis*, 3rd ed, Rudin
MATH 921/922	Real Analysis I/II	*Real Analysis*, 2nd Ed, Folland
MATH 896	Teaching & Learning Math at the Post-Secondary Level	N/A

Skills

Programming Experience in: Python, MATLAB, Java, R

Typesetting Languages: LaTeX

Software: MATLAB R2019b, Microsoft Office Package

Operating Systems: Windows, Linux

Work Experience

- **University of Nebraska-Lincoln** — Lincoln, NE
  Graduate Teaching Assistant — *Aug. 2018 - Current*
  - Instructor of Record: College Algebra & Trigonometry, Contemporary Mathematics, College Algebra
  - Teaching Assistant: Math in the City
  - Recitation Leader: Calculus I, Calculus II
  - Courses Graded: Real Analysis I
- **University of Nebraska-Lincoln** — Lincoln, NE
  Graduate Research Assistant — *Summer 2020, Summer 2021*
  - Summer 2020: Studied semigroup and attractor theory (Funded by NSF grant 1907823)

– Summer 2021: Studied analyticity of fluid-structure interactions (Funded by NSF grant 1907823)

- **University of Scranton** Scranton, PA
  Tutor *Jan. 2015 - May 2018*
  – Tutored students in calculus

Research Experience

- **Graduate Research**
  – Investigation of analyticity for a particular fluid-structure interaction problem, University of Nebraska - Lincoln
- **Undergraduate Research**
  – Exploration of non-standard orthogonalities arising from the character table of a finite commutative group, University of Scranton
  – Computational biology research analyzing results from Functional Network of Tissues in Mouse (FNTM), Princeton University

Publications

1. Dougherty, S. & Myers, S. *Orthogonality from Group Charaters.* Involve, a Journal of Mathematics 14-4 (2021), 555–570. DOI 10.2140/involve.2021.14.555.

Presentations

11. Great Plains Alliance, University of Nebraska - Kearney, October 29, 2021: "Mathematical Control Theory and Applications."
10. PDE & Applied Analysis Seminar, University of Nebraska - Lincoln, October 12, 2021: "Optimal Regularity and Regularization of a Coupled System."
9. Student Applied Analysis Reading Seminar, University of Nebraska - Lincoln, October 6, 2021: "A Primer on Unbounded Operators."
8. Students in Partial Differential Equations Reading Seminar, University of Nebraska - Lincoln, February 9, 2021: "A Crash Course in Topology."
7. Student Applied Analysis Reading Seminar, University of Nebraska - Lincoln, October 7, 2020: "Introduction to Control Theory."
6. PDE & Applied Analysis Seminar, University of Nebraska - Lincoln, September 29, 2020: "Approximate Controllability of the Wave Equation (Part II)."
5. PDE & Applied Analysis Seminar, University of Nebraska - Lincoln, September 22, 2020: "Approximate Controllability of the Wave Equation (Part I)."
4. Student Applied Analysis Reading Seminar, University of Nebraska - Lincoln, September 2, 2020: "Newton's Method for Nonlinear Operators."
3. Mathematical Literature Seminar, University of Nebraska - Lincoln, June 20, 2019: "The Method of Conjugate Gradients."
2. Twentieth Annual Nebraska Conference for Undergraduate Women in Mathematics, Lincoln, NE, January 27, 2018: "Orthogonality from Group Characters," Poster.
1. Nineteenth Annual Nebraska Conference for Undergraduate Women in Mathematics, Lincoln, NE, February 5, 2017: "A Graph-Theoretic Approach to Predicting the NFL Playoff Results."

Leadership, Service, and Volunteer Roles

- Directed Reading Program Mentor, Fall 2021, University of Nebraska - Lincoln
  - Mentored undergraduate student in a topic typically not covered by the UNL cirriculum
- Students in Parital Differential Equations Reading Seminar co-organizer, University of Nebraska Lincoln, Fall 2021
- Interdisciplinary Contest in Modeling Judge, 2020, 2021
- Mathematical Contest in Modeling Judge, 2020, 2021
- Nebraska Conference for Undergraduate Women in Mathematics Organizing Committee Member: Fall 2020 - Spring 2021
- Graduate Student Seminar co-organizer, University of Nebraska Lincoln: Fall 2019, Spring 2020
- Nebraska Conference for Undergraduate Women in Mathematics Volunteer, University of Nebreaska-Lincoln: 2019, 2020
  - Served in various roles to help during the conference, which facilitates speaking opportunities and preparation for post-undergraduate steps for undergraduate women in mathematics
- Math Day Volunteer, University of Nebraska-Lincoln: 2018, 2019, 2020
  - Annual event designed to increase enthusiasm in mathematics for Nebraka high shcool students

Academic Awards

- Lloyd Jackson Award: University of Nebraska-Lincoln, 2020
  - Awarded anually to support graduate student research, based on academic performance
- Outstanding Student in Biomathematics: University of Scranton, 2018
  - Awarded annually to the graduating student in Biomathematics with the highest cumulative GPA