

Douglas J. Dailey

Christendom College
Department of Mathematics and Natural Science
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Education

University of Nebraska-Lincoln	Lincoln, NE
Ph.D. in Mathematics	<i>May 2016</i>
Advisor: Dr. Thomas Marley	
Area: Commutative Algebra	
Thesis Title: <i>Rigidity of the Frobenius, Matlis Reflexivity, and Minimal Flat Resolutions</i>	

University of Nebraska-Lincoln	Lincoln, NE
M.S. in Mathematics	<i>May 2013</i>

University of South Dakota	Vermillion, SD
B.A. in Mathematics, German minor	<i>May 2011</i>
<i>Summa Cum Laude; University Scholar</i>	

Appointments

- **Christendom College, Front Royal, VA**

– Associate Professor of Mathematics	August 2023 - Present
– Acting Chair, Dept. of Mathematics and Natural Science	July 2024 - January 2025
– Assistant Professor of Mathematics	August 2017 - August 2023

- **University of Dallas, Irving, TX**

– Postdoctoral Instructor of Mathematics	August 2016 - July 2017
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- **University of Nebraska-Lincoln, Lincoln, NE**

– Graduate Teaching Assistant	August 2011 - July 2016
– Associate Convener for Precalculus	May 2014 - December 2014
– Graduate Student Teaching Mentor	August 2014 - December 2014
– Associate Convener for College Algebra	January 2014 - May 2014

Teaching Activities

Instructor of Record

I have taught the following courses at Christendom College.

- Intro. to Math. Thought (Math 101)
- Abstract Algebra (Math 402)
- Integers (Math 102)
- Combinatorics (Math 462)
- Calculus I, II, and III (Math 201, 302, 303)
- Number Theory (Math 492)
- Linear Algebra (Math 353)
- Senior Thesis and Seminar (Math 509/512)

I taught the following courses at the University of Dallas:

- Abstract Algebra II
- Euc./Non-Euc. Geometries
- Calculus I
- Calculus II
- Linear Algebra

I taught the following courses at UNL:

- Mathematics Matters (Math 300 (Education majors))
- College Algebra and Trigonometry (Math 103) (Associate Convener)
- College Algebra (Math 101) (Associate Convener)
- Intermediate Algebra (Math 100A)
- Freshman Calculus Seminar (Math 198)

Graduate Teaching Assistant

- Using Mathematics to Understand our World (Math 807T)
- Linear Algebra for High School Teachers (Math 896)
- Experimentation, Conjecture and Reasoning (Math 804T)
- Number Theory and Cryptology for Middle Level Teachers (Math 806T)
- Discrete Mathematics for Middle Level Teachers (Math 805T)
- Algebra for Algebra Teachers (Math 810T)

The students in the courses listed above were all primary, middle-school, or secondary mathematics teachers in Nebraska. The courses were offered as part of the NebraskaMATH Program.

- Calculus I and II Recitations (Math 106/7)

Research Activities

My recent research has been about how mathematics fits into a liberal arts curriculum as well as the philosophy of mathematics. My previous mathematical research interests included commutative algebra and homological algebra, particularly local cohomology theory, Matlis duality, and flat, cotorsion modules.

Publications

4. Dailey, Douglas J. "The Purpose of Mathematics According to Plato and Augustine." *Logos: A Journal of Catholic Thought and Culture* 27, no. 4 (2024): 39-53.
3. D. Dailey, S. Iyengar, T. Marley, "Detecting finite flat dimension of modules via iterates of the Frobenius endomorphism," *Journal of Commutative Algebra*. (2020) 1: 71-76.
2. N. Wakefield, J. Champion, J. Bolkema, D. Dailey, Diagnostic and Achievement Effects of an Early-semester Mastery Activity in College Algebra. *International Journal of Research in Undergraduate Mathematics Education* (2018) 4: 376.
1. D. Dailey, T. Marley, A change of rings result for Matlis reflexivity. *Proc. Amer. Math. Soc.* 145 (2017), 1837-1841.

Talks

- "Unparalleled Creative Imagination: The Discovery of Non-Euclidean Geometries." Christendom College Senior Dinner. September 2024.
- "The Purpose of Mathematics According to Plato and Augustine." Association of Christians in the Mathematical Sciences Conference, Dordt University, May 2024.
- "Finitely Many Proofs of Infinitely Many Primes." Hood College Mathematics Seminar. November 2022.
- "Mathematics and the Parthenon." University of Dallas Intellectual Retreat. January 2017.

Undergraduate Research Projects

- Senior Thesis Direction (Spring 2018-present)

Each spring, I have mentored students writing their undergraduate mathematics theses. The topic for each thesis is student-chosen. I help them to find and understand resources, and I provide feedback and support in writing with appropriate mathematical style.

- Independent Student Research Projects

- Cermak, Peter A. "A Single Criterion for Polynomial Symmetry," *Rose-Hulman Undergraduate Mathematics Journal*: Vol. 23 (2022): Iss. 1, Article 5. <https://scholar.rose-hulman.edu/rhumj/vol23/iss1/5>.

I was Peter's faculty mentor on this publication.

- ICCAE (Intelligence Community Centers for Academic Engagement) Cryptography Workshop, Virginia (Summer 2013, Summer 2014)

I was invited to present a history of cryptography to a group of undergraduate students who were interested in careers in the intelligence community. Following the presentation, we mentored students as they experienced a simulated code-breaking session.

- IMMERSE (Intensive Mathematics: a Mentoring, Education, and Research Summer Experience) Graduate Student Mentor, UNL) (Summer 2012)

IMMERSE was a six-week summer program for students attending graduate school in mathematics the following fall. I delivered a lecture on topology, created and graded homework sets, and assisted the participants throughout the program.

Conferences and Workshops

- **Participant and Presenter** ACMS Biennial Conference, Dordt University, Sioux Center, IA. May 2024.
- **Participant** MAA Mathfest, Virtual. August 2021.
- **Participant** MAA Mathfest, Cincinnati, OH. August 2019.
- **Participant** MAA MD-DC-VA Sectional Meeting, Fredricksburg, VA. Fall 2018.
- **Participant** MAA Project NExT Conference/Mathfest, Columbus, OH. Summer 2016.
- **Co-organizer** for KUMUNUjr commutative algebra conference at UNL. 2015, 2016.
- **Participant** in the 2015 Commutative Algebra Mathematics Research Communities (MRC) hosted by the American Mathematical Society.
- **Participant** in RTG Local Cohomology Workshop at the University of Illinois-Chicago in February 2015.

Professional Memberships

- Mathematical Association of America
- Society of Catholic Scientists
- Association for Christians in the Mathematical Sciences

Professional Service

- Referee, *Rocky Mountain Journal of Mathematics*. (2016)

Successful Grant Proposals

- KUMUNUjr. Conference Support; NSF, \$7,800, Spring 2016.

Institutional Service

At Christendom College:

- Elected member of the Faculty Senate's Compensation and Benefits Committee (Fall 2020 - Present)
- Presidential Ad Hoc Academic Advisory Board (Fall 2024–Present)
- Administered Advanced Studies Contracts (Fall 2019–Present)
- Freshman/Sophomore Academic Advisor (Fall 2018–Present)
- Principles Live Online Lecturer (July 2024)
- Member of Implementation Committee for Strategic Initiative regarding Career Development (Spring 2020)
- Sponsored a student's Goldwater Scholarship Application (Fall 2019)
- Faculty interviewer on Fulbright Scholarship Committee (Fall 2017, 2018)
- Faculty panel member in Christendom's Quodlibet (Nov. 2017, Jan. 2018, Feb. 2020)

At UNL:

- Panel member for campus-wide workshop for GTAs.
- Volunteer for UNL Math Day
- Technical support for NCUWM (Nebraska Conference for Undergraduate Women in Mathematics)
- Elected representative to the Mathematics Graduate Student Advisory Board

Awards

- **Mathematical Association of America Project NExT Fellow**, Green 2016 cohort.
- **Graduate Assistantship in Area of National Need (GAANN) Fellowship**, UNL, 2014.
- **Mentoring Through Critical Transition Points (MCTP) Traineeship**, UNL, 2011.
- **Barry Goldwater Scholar**, University of South Dakota, 2010.