Johan Benedict A. Cristobal

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EDUCATION

2025	Ph.D. in Mathematics, focus in Mathematics Education University of Nebraska-Lincoln Dissertation: *Culture and Context: How Frames of Teaching and Learning Mathematics Form and Change for Graduate Student Instructors*; Advised by Dr. Yvonne Lai
2021	M.S. in Mathematics University of Nebraska-Lincoln
2020	B.S. in Mathematics of Computation University of California, Los Angeles

EMPLOYMENT

08/2025 -	**Visiting Assistant Professor** Dept. of Mathematics, Statistics and Data Science, Loyola Marymount University
05/2025 - 08/2025	Postdoctoral Researcher Center for Science, Mathematics and Computer Education
05/2021 - 05/2025	Graduate Research Assistant Center for Science, Mathematics and Computer Education
08/2020 - 05/2025	Graduate Teaching Assistant Dept. of Mathematics, University of Nebraska-Lincoln

TEACHING

Courses Taught at Loyola Marymount

- Math 101 - Algebra (2 sections) — Fall 2025
- Math 120 - Precalculus Mathematics (2 sections) — Fall 2025

at Nebraska-Lincoln | ♦ denotes courses I also worked on as Course Developer

- Math 221 - Differential Equations (Tutor) — Summer 2022, 2025
- ♦ Math 103 - College Algebra and Trigonometry — Fall 2024
- ♦ Math 97 - Assisting Learning for University Mathematics — Fall 2024
- Math 302 - Math Modeling — Spring 2023
- ♦ Math 101C - College Algebra Corequisite — Fall 2022
- ♦ Math 101 - College Algebra — Spring 2022
- ♦ Math 100A - Intermediate Algebra — Fall 2021

Walter Mientka Teaching Award | Awarded 2021 by the UNL Math Department.

"The Walter Mientka Award is given to students who demonstrate exceptional promise as a teacher based on their work during their first one or two years as a graduate teaching assistant in our department."

Qualifying Exam Workshop Review and Preparation Sessions (UNL) Summer 2022
Math 830/831 - Ordinary and Partial Differential Equations Workshop Leader
Note: Also was a Grader for Math 830 (Fall 2023) and Math 831 (Spring 2025).

ON-GOING GRANT-FUNDED WORK

- **A**chieving **C**ritical **T**ransformations in **U**ndergraduate **P**rograms in Mathematics (ACT UP Math) NSF ESS-2201486; PI Wendy Smith

  Spring 2025 to **Present** – Supporting research analysis, writing, and propagation efforts

- Educating Undergraduate Students for STEM **C**areer **O**pportunities in **N**ebraska: **N**etworks, **E**xperiential-learning, & **C**omputational **T**hinking (STEM CONNECT) NSF/S-STEM DUE-1930211; PI Jim Lewis

  Spring 2024 to **Present** – Supporting research writing and propagation efforts

PREVIOUS GRANT-FUNDED WORK

- First Generation First Year Research Experience for Undergraduates (REU) NSF/DMS-2236983; PI Eloísa Grifo

  Summer 2024 – Working with another graduate student (Michael Pieper), I co-organized and co-led this REU for a group of four incoming first-generation freshman from an Upward Bound program. Building on recent work by Mikil Foss and Michael Pieper (2025, in progress) which showed a classically ill-posed problem in calculus of variations is well-posed if interpreted using nonlocal operators, the REU project tackled the questions: *Can this result be used in practice in the context of signal processing? Under what kinds of conditions would it yield a computational result?* At the forefront of the REU, we provided orientation-like experiences to students with touring the UNL campus and hosting panels.

- *Understanding the experiences of underrepresented students in 300-level mathematics courses* College of Arts & Sciences Strategies Priorities (UNL Grant); PI Amy Bennett

- Mathematics of Doing, Understanding, Learning and Educating for Secondary Schools (MODULE(S^2)) – NSF DUE-1726744; PI Yvonne Lai

- Investigating the Role of Collaboration on the Development of Student Ideas using a Learning Progression for the Function Concept – NSF DRL-2101393; PI Edith Graf

- CSForAll: Adapt, Implement and Research at Nebraska – NSF DRL-1837476; PI Leen-Kiat Soh

PAPERS

Peer-reviewed Journal Articles

[1] **Cristobal, J. B.** (under review). Interrogating the Treatment of Mathematics Knowledge as Property.

[2] **Cristobal, J. B.**, Tremaine, R., Black, K., Hagman, J. E., Kress, N., McNeill, R. T., & Pai, L. (under review). When we say "rigor" in undergraduate mathematics, what do we mean?.

[3] Funk, R., Pai, L., **Cristobal, J. B.**, & Xie, N. (under review). "I've Had to Show a Lot of Tenacity": Stories of Power and Empowerment in the Experiences and Identities of S-STEM Women Scholars

Peer-reviewed Conference Proceedings

[4] **Cristobal, J. B.** (2024). Complicating the Relationship of Frames and Responses in Teacher Noticing. In Cook S., Katz B., Moore-Russo, D. (Eds.), *Proceedings of the 26th Annual Conference on Research in Undergraduate Mathematics Education*, Omaha, Nebraska (pp. 268-276).

[5] Funk, R., Pai, L., & **Cristobal, J. B.** (2024). "Persistence in a S-STEM grant: Understanding the Intersectional Experiences of Women Pursuing STEM." Conference Paper for the *2024 **A**merican **S**ociety for **E**ngineering **E**ducation Annual Conference & Exposition.*

[6] Funk, R., Pai, L., Rader, B., **Cristobal, J. B.**, & Lewis, J. (2024). ""Someone has invested in me to do this": Supporting Low-Income Students to Persist in STEM through a NSF S-STEM grant." Poster Paper for the *2024 **A**merican **S**ociety for **E**ngineering **E**ducation Annual Conference & Exposition.*

[7] **Cristobal, J. B.** (2025). From "Struggle" to "Acceptance": Andy's Narrative of First-Time Teaching and Her Frames. In S. Cook, B. P. Katz & K. Melhuish (Eds.), *Proceedings of the 27th Annual Conference on Research in Undergraduate Mathematics Education*, Alexandria, VA (pp. 149-156).

[8] **Cristobal, J. B.** (2025). Aspects of Culture and Context which Shape Frames of Teaching and Learning. In S. Cook, B. P. Katz & K. Melhuish (Eds.), *Proceedings of the 27th Annual Conference on Research in Undergraduate Mathematics Education*, Alexandria, VA (pp. 157-164).

[9] Bennett, A. B., **Cristobal, J. B.**, Lai, Y., & Young, C. (2025). Real Analysis Professors' Noticing of Equity Gaps and Minoritized Students' Perspectives. In S. Cook, B. P. Katz & K. Melhuish (Eds.), *Proceedings of the 27th Annual Conference on Research in Undergraduate Mathematics Education*, Alexandria, VA (pp. 624-633).

FUNDING/GRANTS

[1] Simons Laufer Mathematical Sciences Institute's Travel Grant for Critical Issues in Mathematics Education 2024

[2] American Mathematical Society's 2025 Joint Mathematics Meetings Graduate Student Travel Grant

[3] University of Nebraska-Lincoln's Graduate Student Travel Award for Spring 2025

SERVICE

Research in Graduate Mathematics Education (RGME) Summer 2024 - **Present**
Website Manager, Member on the Organizing Committee `https://rgme-group.com/`
Writer for the 2025 Working Group Proposal

Graduate Student Teaching Table Fall 2022 - Spring 2025
Co-founder and organizer, seminar for and by graduate students to discuss education or teaching topics

UNL Math Department Recruitment — Graduate Student Volunteer (various dates)
Math Alliance Field of Dreams Conference (November 2022)
Joint Mathematics Meeting (January 2024)
2024 AMS Online Fall Graduate School Fair (October 2024)
Nebraska Conference for Undergraduate Women in Mathematics (2024, 2025)

UNL Math Department Orientations Summer 2024
Presenter in the First Year and the Returning Graduate Student Orientation,
Organizer of the Mathematics Learning Assistant Orientation

UNL Math Day Organizing Committee Fall 2023 - Spring 2025
Organizer for Volunteer outreach and scheduling

Session Moderator and Volunteer for RUME 26 February 2024
*26th Annual Conference on **R**esearch in **U**ndergraduate **M**athematics **E**ducation* at Omaha, NE

Guest Peer-Reviewer for PRIMUS Fall 2023
***P**roblems, **R**esources, and **I**ssues in **M**athematics **U**ndergraduate **S**tudies – Volunteer*

SELECT PRESENTATIONS

[1] *One graduate students' experience teaching for the first time Students Teaching*
Joint Mathematics Meeting 2025 in the AMS Contributed Papers, Mathematics education.
`https://youtu.be/gFIJFILrZkE`

[2] *Success, Struggle, Surprise, and Short-term Goals: Reflections from Mathematics Graduate Students Teaching* – A dissertation reflection
Joint Mathematics Meeting 2025 in the AMS Special Session: Research Presentations by Math Alliance Scholar Doctorates. `https://youtu.be/ht0_geTrGRc`

[3] *Successes, Struggles, Surprises and Short-term Goals of Mathematics Graduate Student Instructors Teaching for the First Time*
Mathematical Association of America's MathFest 2024 in the Research in Undergraduate Mathematics Education session. `https://youtu.be/1TYHb2xk5Hg`

[4] *Understanding the Intersectional Experiences and Identities of Women Who Persist in STEM*
2024 Nebraska Mathematical Association of Two Year Colleges, with Dr. Rachel Funk.

[5] *Coloring the Relationship of Frames and Responses in Teacher Noticing*
26th Annual Conference on Research in Undergraduate Mathematics Education (**S**pecial **I**nterest **G**roup of the **M**athematical **A**ssociation of **A**merica on **R**esearch in **U**ndergraduate **M**athematics **E**ducation, SIGMAA on RUME). `https://youtu.be/HE6XIPJRokY`

NOTABLE CONFERENCES

◇ = Presented , ⋆ = Invited , † = Department Volunteer, $ = Travel funded

1. † Math Alliance Field of Dreams Conference | Minneapolis, MN — November 2022
2. 25th SIGMAA on RUME | Omaha, NE — February 2023
3. ◇ 7th Northeastern Conference on RUME | Virtual — November 2023
4. † Joint Mathematics Meetings | San Francisco, CA — January 2024
5. ◇ 26th SIGMAA on RUME | Omaha, NE — February 2024
6. ◇ $ MAA Mathfest | Indianapolis, IN — August 2024
7. ◇ ⋆ $ Joint Mathematics Meetings | Seattle, WA — January 2025
8. ◇ $ 27th SIGMAA on RUME | Alexandria, VA — February 2025
9. † Midwest Numerical Analysis Day 2025 | Lincoln, NE — April 2025

WORKSHOPS & PROFESSIONAL DEVELOPMENT ATTENDED

◇ = Presented , ⋆ = Invited , $ = Travel funded

1. Pacific Math Alliance Conference | California State University at East Bay — October 2019
2. $ Math Alliance Field of Dreams Conference | St. Louis, MO — November 2019
3. $ Critical Issues in Mathematics Education 2024: Bringing Innovation to Scale: Teaching-Focused Faculty as Change Agents | Berkeley, CA — April 2024
4. Workshop for Research and Workforce Development in Fluid Mechanics | Lincoln, NE — May 2025

SKILLS

Mathematics LaTeX, curriculum development

Statistical Methods RStudio

Programming C, C++, Python, Matlab, LISP, SQL, and HTML/CSS (Web-design)

Languages English (fluent), Filipino/Tagalog (native fluent), Spanish (intermediate)

Microsoft Suite Word, Excel, Powerpoint

Adobe Creative Suite Acrobat, Photoshop, Illustrator, Premiere Pro, InDesign, Lightroom

Video/Content Creation `https://www.youtube.com/@johango`, textbook videos, and conference or presentation videos

GRADUATE COURSE WORK in Mathematics

These 14 courses are listed in the order I took them
♦ *indicates courses I would be comfortable to teach at the graduate-level*
◇ *indicates courses I would be comfortable to teach at an (advanced) undergraduate-level*

- ♦ 825 and 826 - Mathematical Analysis I/II
  Text: *Real Analysis and Applications: Theory in Practice* by A. P. Donsig and K. R. Davidson
  (passed the Qualifying Exam for this Sequence)
- ♦ 830 and 831 - Ordinary/Partial Differential Equations
  Texts: *Ordinary Differential Equations with Applications, 2nd edition* by C. Chicone.
  Introduction to Partial Differential Equations with Applications by E. C. Zachmanoglou and D. W. Thoe
  A first course in the numerical analysis of differential equations by C. Iserles
  (passes the Qualifying Exam for this Sequence)
- ◇ 850 and 852 - Discrete Mathematics I/II (Combinatorics, Coding Theory, Graph Theory)
  Text: *Combinatorial Mathematics* by D. B. West
- ◇ 817 and 818 - Abstract Algebra
  Text: *Abstract Algebra, Third Edition* by D. S. Dummit and R. M. Foote
- ◇ 921 and 922 - Real Analysis I/II (Measure Theory)
  Text: *Real Analysis: Modern Techniques and Their Applications, 2nd ed.* by G. B. Folland
- ◇ 934 - Topics in Partial Differential Equations (Fluid Dynamics)
  Text: *Partial Differential Equations* by L. C. Evans (and other notes)
- ◇ 833 - Nonlinear Optimization
  Text: *Linear and Nonlinear Optimization, 2nd ed.* by I. Griva, S. G. Nash, and A. Sofer
- ♦ 941 - Partial Differential Equations (Distributions, Sobolev Spaces, and Elliptic BVPs)
  Text: *Functional Analysis, Sobolev Spaces and Partial Differential Equations* by H. Brezis
  (passed the Comprehensive Exam based on this course)
- ♦ 928 - Functional Analysis
  Text: *A course in functional analysis, 2nd ed.* by J. B. Conway
  (passed the Comprehensive Exam based on this course)
- ♦ 958 - Topics in Combinatorics (Geometry and Probability in High Dimensions for Data Science)
  Text: Primarily used notes provided by instructor

Other Relevant Courses from Undergraduate: **Machine Learning** (in the Mathematics Department and in the Computer Science Department), **Probability Theory** (in the Mathematics Department), and **Artificial Intelligence** (in the Computer Science Department).

RELEVANT GRADUATE COURSE WORK for Education Research

Supplementary courses taken that are not part of the Mathematics Ph.D. program.

- **Educational Psychology Department:**
  859 - Statistical Methods *Quantitative Methods*
  900K - Qualitative Approaches to Education Research *Qualitative Methods*
- **Teaching, Learning, and Teacher Education Department:**
  801 - Curriculum Inquiry
  807C - Equitable Practices in Mathematics Education: Mathematics Classroom Discourse
  861 - Education for a Pluralistic Society: Foundation and Issues
  880E - Teaching with Technology: Instructional Technology in Mathematics
  949B - Critical, Anti-colonial, & Decolonizing Theories in Education